JVC

SERVICE MANUAL

VIDEO CASSETTE RECORDER

HR-J210E/J215E/EG

ShowView

VHS
PAL

SPECIFICATIONS *(The specifications shown pertain specifically to the model HR-J215E)*

GENERAL

Power requirement	: AC 220 – 240 V∿, 50/60 Hz
Power consumption	: 19 W
Temperature	
Operating	: 5°C to 40°C
Storage	: –20°C to 60°C
Dimensions (WxHxD)	: 360 x 94 x 339 mm
Weight	: 4.4 kg
Format	: VHS PAL standard

VIDEO/AUDIO

Signal system	: PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system	: Rotary, slant azimuth two-head helical scan system
Signal-to-noise ratio	: 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution	: 250 lines
Frequency range	: 70 Hz to 10,000 Hz
Input/Output	: 21-pin scart connector

TUNER/TIMER

TV channel storage capacity	: 80 positions (+ AUX position "AU")
Channel coverage	: VHF 47 – 89/104 – 300/ 302 – 470 MHz UHF 470 – 862 MHz
Aerial output	: UHF channel 36 (Adjustable 32 – 40)
Memory backup time	: Approx. 3 min.

ACCESSORIES

Provided accessories	: Aerial cable, Infrared remote control unit, "R6" battery x 2, AC power cord

Design and specifications subject to change without notice.

No. 82391
March 1994

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The following table lists the differing points between Models (HR-J210E, HR-J215EG and HR-J215E) in this series.

	HR-J210E	HR-J215EG	HR-J215E
VPS/PDC	×(OPTION)	○	×(OPTION)
SHOW VIEW	×	○	×
PERI INPUT TERMINAL	1	2	1

○ : USED × : NOT USED

Important Safety Precautions

Prior to shipment from the factory, JVC products are strictly inspected to conform with the recognized product safety and electrical codes of the countries in which they are to be sold. However, in order to maintain such compliance, it is equally important to implement the following precautions when a set is being serviced.

● Precautions during Servicing

1. Locations requiring special caution are denoted by labels and inscriptions on the cabinet, chassis and certain parts of the product. When performing service, be sure to read and comply with these and other cautionary notices appearing in the operation and service manuals.

2. Parts identified by the ⚠ symbol and shaded ( ) parts are critical for safety.
   Replace only with specified part numbers.
   Note: Parts in this category also include those specified to comply with X-ray emission standards for products using cathode ray tubes and those specified for compliance with various regulations regarding spurious radiation emission.

3. Fuse replacement caution notice.
   Caution for continued protection against fire hazard.
   Replace only with same type and rated fuse(s) as specified.

4. Use specified internal wiring. Note especially:
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads

5. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers
   4) Insulation sheets for transistors
   5) Barrier

6. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.) wrap ends of wires securely about the terminals before soldering.

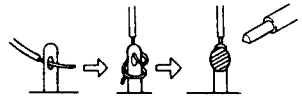


Fig. 1

7. Observe that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.)

8. Check that replaced wires do not contact sharp edged or pointed parts.

9. When a power cord has been replaced, check that 10–15 kg of force in any direction will not loosen it.

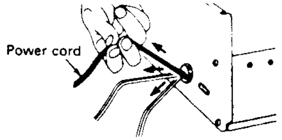


Fig. 2

10. Also check areas surrounding repaired locations.

11. Products using cathode ray tubes (CRTs)
    In regard to such products, the cathode ray tubes themselves, the high voltage circuits, and related circuits are specified for compliance with recognized codes pertaining to X-ray emission. Consequently, when servicing these products, replace the cathode ray tubes and other parts with only the specified parts. Under no circumstances attempt to modify these circuits. Unauthorized modification can increase the high voltage value and cause X-ray emission from the cathode ray tube.

12. Crimp type wire connector
    In such cases as when replacing the power transformer in sets where the connections between the power cord and power transformer primary lead wires are performed using crimp type connectors, if replacing the connectors is unavoidable, in order to prevent safety hazards, perform carefully and precisely according to the following steps.
    1) **Connector part number** : E03830-001
    2) **Required tool** : Connector crimping tool of the proper type which will not damage insulated parts.
    3) **Replacement procedure**
       (1) Remove the old connector by cutting the wires at a point close to the connector.
       Important : Do not reuse a connector (discard it).

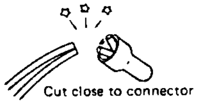


Fig. 3

(2) Strip about 15 mm of the insulation from the ends of the wires. If the wires are stranded, twist the strands to avoid frayed conductors.

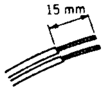


Fig. 4

(3) Align the lengths of the wires to be connected. Insert the wires fully into the connector.

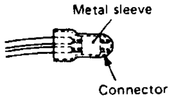


Fig. 5

(4) As shown in Fig. 6, use the crimping tool to crimp the metal sleeve at the center position. Be sure to crimp fully to the complete closure of the tool.

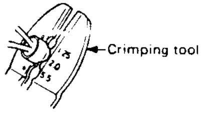


Fig. 6

(5) Check the four points noted in Fig. 7.

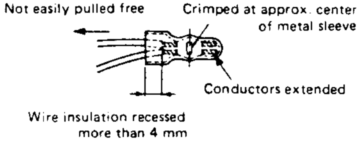

Not easily pulled free
Crimped at approx. center of metal sleeve
Conductors extended
Wire insulation recessed more than 4 mm

Fig. 7

● Safety Check after Servicing

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts and wires have been returned to original positions. Afterwards, perform the following tests and confirm the specified values in order to verify compliance with safety standards.

1. **Insulation resistance test**
   Confirm the specified insulation resistance or greater between power cord plug prongs and externally exposed parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

2. **Dielectric strength test**
   Confirm specified dielectric strength or greater between power cord plug prongs and exposed accessible parts of the set (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.). See table 1 below.

3. **Clearance distance**
   When replacing primary circuit components, confirm specified clearance distance (d), (d') between soldered terminals, and between terminals and surrounding metallic parts. See table 1 below.

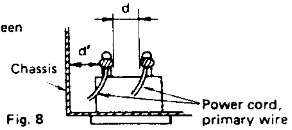


Fig. 8

4. **Leakage current test**
   Confirm specified or lower leakage current between earth ground/power cord plug prongs and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.).
   Measuring Method: (Power ON)
   Insert load Z between earth ground/power cord plug prongs and externally exposed accessible parts. Use an AC voltmeter to measure across both terminals of load Z. See figure 9 and following table 2.

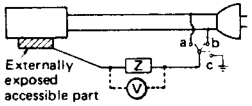
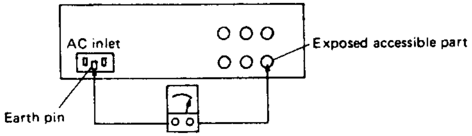


Fig. 9

5. **Grounding (Class I model only)**
   Confirm specified or lower grounding impedance between earth pin in AC inlet and externally exposed accessible parts (Video in, Video out, Audio in, Audio out or Fixing screw etc.).
   Measuring Method:
   Connect milli ohm meter between earth pin in AC inlet and exposed accessible parts. See figure 10 and grounding specifications.



Milli ohm meter

Fig. 10

Grounding Specifications

Region	Grounding Impedance (Z)
USA & Canada	Z ≦ 0.1 ohm
Europe & Australia	Z ≦ 0.5 ohm

AC Line Voltage	Region	Insulation Resistance (R)	Dielectric Strength	Clearance Distance (d), (d')
100 V	Japan	R ≧ 1 MΩ/500 V DC	AC 1 kV 1 minute	d, d' ≧ 3 mm
100 to 240 V			AC 1.5 kV 1 minute	d, d' ≧ 4 mm
110 to 130 V	USA & Canada	–	AC 1 kV 1 minute	d, d' ≧ 3.2 mm
110 to 130 V 200 to 240 V	Europe & Australia	R ≧ 10 MΩ /500 V DC	AC 3 kV 1 minute (Class II) AC 1.5 kV 1 minute (Class I)	d ≧ 4 mm d' ≧ 8 mm (Power cord) d' ≧ 6 mm (Primary wire)

Table 1 Specifications for each region

AC Line Voltage	Region	Load Z	Leakage Current (i)	a, b, c
100 V	Japan	1 kΩ	i ≦ 1 mA rms	Exposed accessible parts
110 to 130 V	USA & Canada	0.15 μF 1.5 kΩ	i ≦ 0.5 mA rms	Exposed accessible parts
110 to 130 V 220 to 240 V	Europe & Australia	2 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Antenna earth terminals
		50 kΩ	i ≦ 0.7 mA peak i ≦ 2 mA dc	Other terminals

Table 2 Leakage current specifications for each region

Note: These tables are unofficial and for reference only. Be sure to confirm the precise values for your particular country and locality.

INSTRUCTIONS

Safety Precautions

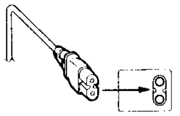
The rating plate and the safety caution are on the rear of the unit.

WARNING: DANGEROUS VOLTAGE INSIDE
WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

The OPERATE button does not completely shut off mains power from the unit, but switches operating current on and off.

This unit is produced to comply with Directives 76/889/EEC, 82/499/EEC, 87/308/EEC and Standard IEC Publ. 65.

CAUTION



- To avoid electric shock or damage to the unit, first firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.
- When you are not using the recorder for a long period of time, it is recommended that you disconnect the power cord from the AC outlet.
- Dangerous voltage inside. Refer internal servicing to qualified service personnel. To prevent electric shock or fire hazard, remove the power cord from the AC outlet prior to connecting or disconnecting any signal lead or aerial.

WARNING
There are two different types of SECAM colour systems: SECAM-L, used in FRANCE (also called SECAM-West), and SECAM-B, used in Eastern European countries (also called SECAM-East).

1. This recorder can also receive SECAM-B colour television signals for recording and playback.
2. Recordings made of SECAM-B television signals produce monochrome pictures if played back on a video recorder of SECAM-L standard, or do not produce normal colour pictures if played back on a PAL video recorder with SECAM-B system incorporated (even if the TV set is SECAM-compatible).
3. SECAM-L prerecorded cassettes or recordings made with a SECAM-L video recorder produce monochrome pictures when played back with this recorder.
4. This recorder cannot be used for the SECAM-L standard. Use a SECAM-L recorder to record SECAM-L signals.

IMPORTANT:
- It may be unlawful to record or play back copyrighted material without the consent of the copyright owner.
- Please read the "Precautions" section of this instruction manual before installing or operating the recorder.

- Only cassettes marked "VHS" can be used with this video recorder.
- HQ VHS is compatible with existing VHS equipment.
- ShowView is a trademark applied for by Gemstar Development Corp. ShowView system is manufactured under licence from Gemstar Development Corporation.

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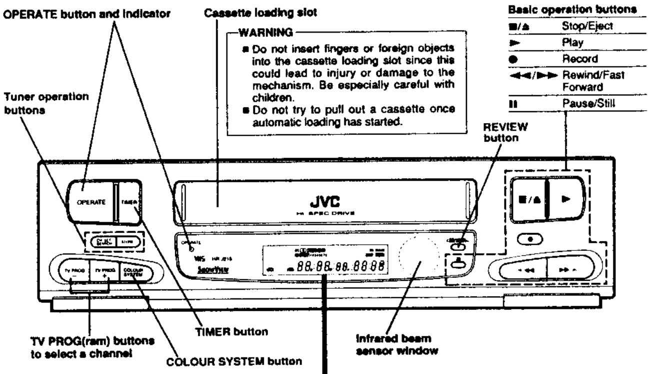
Controls And Indicators

Front Panel



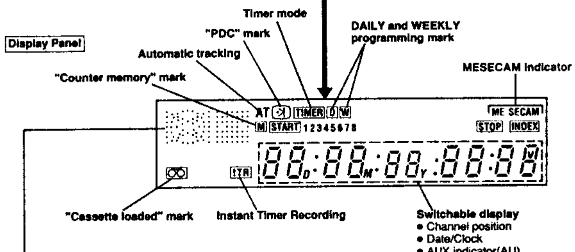
OPERATE button and Indicator
Cassette loading slot
Tuner operation buttons
REVIEW button
TV PROG(ram) buttons to select a channel
TIMER button
COLOUR SYSTEM button
Infrared beam sensor window
OPERATE
TIMER
JVC

WARNING
- Do not insert fingers or foreign objects into the cassette loading slot since this could lead to injury or damage to the mechanism. Be especially careful with children.
- Do not try to pull out a cassette once automatic loading has started.

Basic operation buttons

■/⏏	Stop/Eject
►	Play
●	Record
◄◄/►►	Rewind/Fast Forward
❚❚	Pause/Still

Display Panel



Timer mode
"PDC" mark
DAILY and WEEKLY programming mark
Automatic tracking
MESECAM Indicator
"Counter memory" mark
AT
TIMER
D
W
M
START
12345678
ME SECAM
STOP
INDEX
ITR
"Cassette loaded" mark
Instant Timer Recording

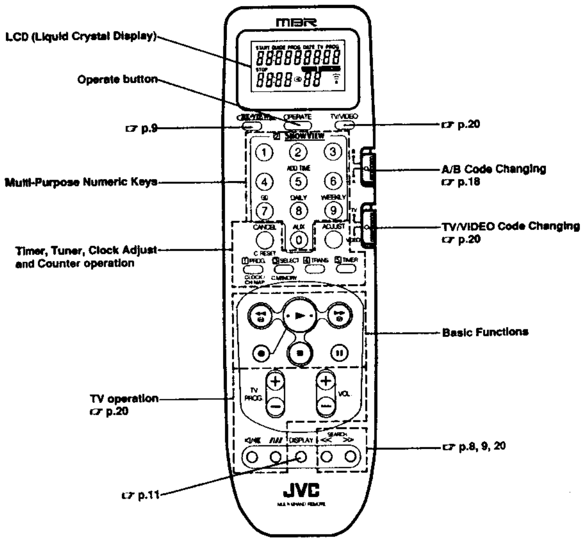
Switchable display
- Channel position
- Date/Clock
- AUX indicator(AU)
- Child lock indicator
- Timer start/stop time
- Instant timer recording time
- Real channel
- Realtime tape counter
- INDEX code number

Symbolic mode indicators

PLAY:	▷	REW VARIABLE SHUTTLE SEARCH:	◁ ◁◁
FF:	▷▷	STILL: FORWARD SLOW:	▷ ❚❚
REW:	◁◁	RECORD:	○
FF VARIABLE SHUTTLE SEARCH:	▷ ▷▷	RECORD PAUSE:	○ ❚❚
REVERSE PLAY:	◁		

Controls And Indicators (cont'd)

Wireless Remote Control



LCD (Liquid Crystal Display)
Operate button
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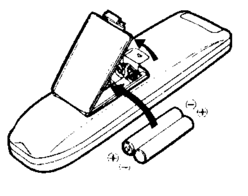
☞ p.20
Multi-Purpose Numeric Keys
A/B Code Changing ☞ p.18
TV/VIDEO Code Changing ☞ p.20
Timer, Tuner, Clock Adjust and Counter operation
Basic Functions
TV operation ☞ p.20
☞ p.8, 9, 20
☞ p.11
MBR
OPERATE
TV/VIDEO
SHOWVIEW
ADD TIME
DAILY
WEEKLY
CANCEL
AUX
ADJUST
C.RESET
PROG.
SELECT
TRANS
TIMER
CLOCK/CH MAP
C.MEMORY
TV PROG.
VOL.
DISPLAY
SEARCH
JVC



Installing Batteries
1. Open the battery compartment cover.
2. Insert 2 "R6"-size batteries (provided) in the correct directions.
3. Replace the cover.

How To Use
The remote control can operate most of your video recorder's functions, as well as basic functions of TV sets of JVC and other brands. ☞ p. 20.
- Point the remote control toward the sensor window.
- The maximum operating distance of the remote control is about 8 m.

Connections

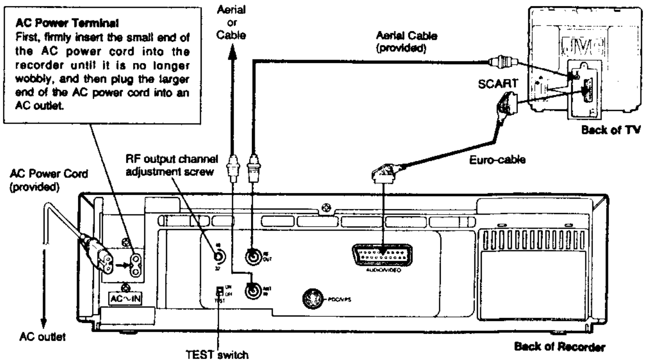
It's essential that your video recorder be properly connected. Follow these steps carefully. THESE STEPS MUST BE COMPLETED BEFORE ANY VIDEO OPERATION CAN BE PERFORMED.

A RECORDER-TO-TV CONNECTION

RF CONNECTION
For TV sets without AV input terminals:
- Connect the TV aerial cable to the recorder.
- Connect the recorder to the TV's aerial terminal.

AV CONNECTION
For TV sets with AV input terminals:
- Connect the aerial, recorder and TV as per "RF CONNECTION".
- Connect the recorder to the TV's 21-pin SCART connector.

AC Power Terminal
First, firmly insert the small end of the AC power cord into the recorder until it is no longer wobbly, and then plug the larger end of the AC power cord into an AC outlet.

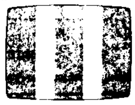


Aerial or Cable
Aerial Cable (provided)
SCART
Back of TV
Euro-cable
RF output channel adjustment screw
AC Power Cord (provided)
AC~IN
AUDIO/VIDEO
PDC/VPS
AC outlet
TEST switch
Back of Recorder

B ADJUST VIDEO CHANNEL (UHF 36)

With an RF connection, the video recorder sends picture and sound signals through the connecting cable to your TV on UHF channel 36.

TEST SIGNAL
- Turn on the recorder.
- Set the TEST switch to ON.
- Set your TV to the video channel. Tune to the real channel 36, to bring the two vertical white bars on the screen most clearly.

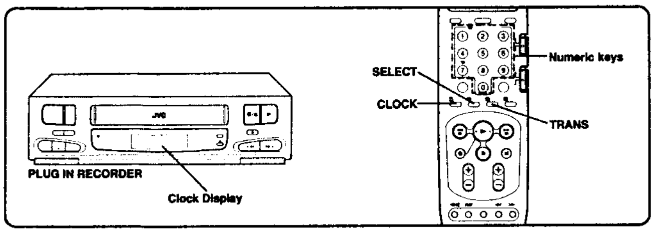


- Your TV should be set to the channel designated for use with a video recoder or to a spare channel if there is not a specified channel.
- Reset the TEST switch to OFF.

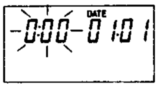
NOTE:
If some interference noise is seen on the screen because of broadcasts on neighbouring channels, it is necessary to shift the video channel from UHF channel 36. This is possible for UHF channels 32 through 40. Consult your JVC dealer for making this adjustment.

IMPORTANT:
To operate the recorder with your TV using an RF connection, it is always necessary to set your TV's channel to VIDEO CHANNEL. With an AV connection, set the TV to the VIDEO (or AV) mode.

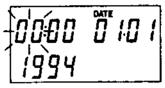
Setting The Clock



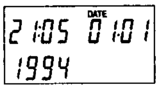
1. **Load batteries (☞ p.4).**



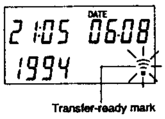
2. **Press CLOCK.**



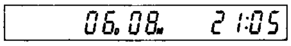
3. **Press the appropriate numeric keys to input the time.**
   - Example: For 21:05, press 2 1 0 5.



4. **Press the appropriate numeric keys to input the day, month and year.**
   - Example: For 6th August, 1994, press 0 6 0 8 1 9 9 4.



5. **Press TRANS with the remote control directed to the recorder's remote sensor window.**
   - The remote control's clock will start. At the same time, the set data will be transferred to the recorder.



TO MAKE CORRECTIONS

Press SELECT button so that the item you want to change blinks. Re-input that item. Continue to step 5.

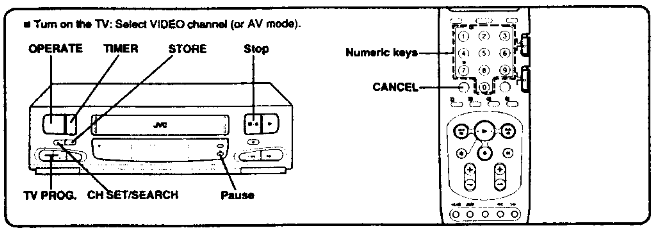
AFTER A POWER CUT

Since your video recorder has a 3-minute backup memory, it will not be affected by short power cuts. If mains power is unavailable for over 3 minutes, however, the recorder's display will reset to 0:00. In such a case, simply transfer the remote control's time to the recorder.

1. Press CLOCK three times.
2. Press TRANS with the remote control directed to the recorder's remote sensor window.

NOTES:
- If the day and month data is invalid (such as 31st April), the month digits are cleared automatically and the day digits will blink. Input again.
- If the year digits are automatically cleared in step 4, it is possible that you have input 29th February for a non-leap year. Input again.
- When the batteries are exhausted, the time display will change to "0:00" and start blinking. Replace all the batteries and set the clock again.

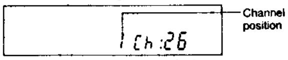
Setting The Tuner



- Turn on the TV: Select VIDEO channel (or AV mode).

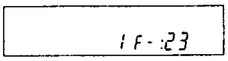
The procedure introduced here lets you assign receivable channels in your area to channel positions on your video recorder's tuner. Once stored, these can be accessed with the TV PROG. buttons.

1. **Press OPERATE to turn on the recorder.**
2. **Press CH SET/SEARCH until the display panel shows the following.**

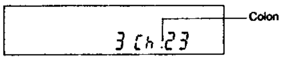


Ch = Regular CC = Cable

3. **Press CH SET/SEARCH again briefly to start automatic scanning for receivable channels.**
   - Automatic scanning stops when a station is detected, and the channel position will blink.
   - Holding down CH SET/SEARCH will start reverse search.
   - If you don't want to store the station detected, simply press CH SET/SEARCH to continue automatic scanning.
4. **Press Pause to fine-tune the channel, if necessary.**
   - When the picture is clear, proceed to step 7.
5. **Press TV PROG. +/– so that the picture becomes clear.**



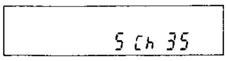
6. **Press Pause.**
7. **Press numeric keys or TV PROG. to select the channel position where you wish to store that TV station.**



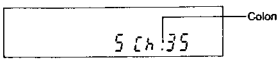
8. **Press STORE to store the station.**
   - The colon will disappear when the station is stored.
9. **Repeat steps 3 through 8 for other receivable channels.**
10. **Press Stop on the recorder to disengage the Channel Set mode.**

TO DELETE STORED CHANNELS

1. Press TV PROG. to select the channel position you want to skip.
2. Press CH SET/SEARCH for more than 2 seconds.



3. Press CANCEL.

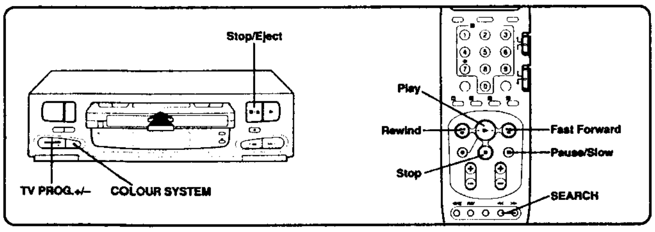


   - The colon will appear when the station is deleted. Channel position 5 can no longer be chosen by TV PROG. buttons.
4. Press Stop on the recorder to disengage the Channel Set mode.

TO STORE NEW CHANNELS

1. Press CH SET/SEARCH for more than 2 seconds.
2. Press TIMER.
   - Real channel starts blinking.
3. Press TIMER to change the band between Ch and CC, if necessary.
4. Press numeric keys to input the number of the real channel you want to store.
5. Press numeric keys to input the number of a vacant channel position.
6. Press STORE to store the channel.
7. Press Stop on the recorder to disengage the Channel Set mode.

Playback



Basic Operations

Preparation

- Turn on the TV.
- Select VIDEO channel (or AV mode).

1. **Load a cassette.**
   - The recorder power will come on automatically.
   - The counter will be reset to "0:00:00" automatically.
   - If the safety tab on the cassette is removed, playback will start automatically.
   - Select the appropriate colour system by pressing the COLOUR SYSTEM button.(☞ p. 11)
2. **Press Play to start playback.**
3. **Press Stop to stop playback.**
   - To rewind the tape, press Rewind.
   - To fast-forward the tape, press Fast Forward.
   - To stop rewind or fast-forward, press Stop.
4. **Press Stop/Eject on the recorder to eject the tape.**

Variable-Speed/High-Speed Search, Still Playback/Frame Advance/Forward Slow Motion

During Playback or Still:
- Press either SEARCH button for variable-speed search.
- The more times the button is pressed, the faster the playback picture will move.
- To decrease speed, press the button for the opposite direction.

During Playback:
- Press Fast Forward for high-speed forward search, or Rewind for high-speed reverse search.
- For short searches, keep Fast Forward or Rewind pressed for more than 2 seconds. When released, normal playback will continue.
- Press Pause/Slow to view a still picture.
- Press again to advance the picture frame by frame.
- Press Pause/Slow for 2 seconds for slow motion.

Other Functions

Repeat Playback

During Playback:
1. Press Play for more than 5 seconds, and release.
   - The Play indicator ( ) on the display panel will blink slowly.
   - The tape will be played all the way to the end 20 times automatically, and then stop.
2. To stop playback at any time, press Stop.

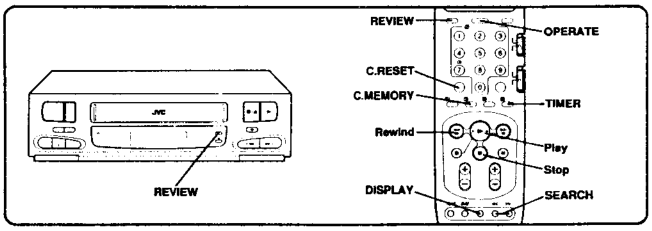
Manual Tracking

Your video recorder is equipped with automatic tracking control. If you wish to adjust tracking manually, you can override this function.

During Playback:
1. Press the recorder's TV PROG. + and – buttons simultaneously.
2. Press TV PROG. + or – to adjust tracking.
   - Press TV PROG. + and – simultaneously to return to automatic tracking.

During Slow:
1.Simply press TV PROG.+ or – to adjust tracking.

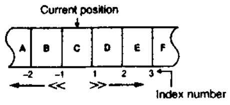
NOTES:
- The recorder automatically stops when still continues for more than 5 minutes.
- If the still picture is unstable, use the TV PROG. buttons to correct the picture.
- During search playback, some noise bars will appear.
- There is no audio during search, slow, still, or frame-by-frame playback.
- When a new tape is inserted, the recorder enters the automatic tracking mode automatically.



Index Search

Your recorder automatically marks index codes at the beginning of each recording. This function gives you quick access to any one of 9 index codes in either direction.

During Stop:
1. Press SEARCH << or >>. "INDEX –1" or "INDEX 1" will be displayed on the display panel and search will begin in the corresponding direction.
2. If you wish to access index codes 2 through 9, press SEARCH repeatedly until the correct index number is displayed.
   Ex.: To locate the beginning of B from the current position, press SEARCH << twice.
   To locate the beginning of D from the current position, press SEARCH >> once.



- When the specified index code is found, playback will start antomatically.

ReView Function

Simply by pressing a single button, the recorder power comes on, rewinds, and begins playback of the last recording. This makes it easier to "review" the programme you have timer-recorded.

When the recorder power is off:
Press REVIEW.
- After the recorder power comes on, the tape will be rewound to the beginning of the last recording (where the index code is placed) and playback will start automatically.
- To play back a recording located 2 index codes away, press REVIEW twice. You can access any one of up to 9 index codes.
- ReView is not possible while the recorder is in the Timer mode.

Counter Memory

During Playback:
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET at a point you wish to locate later.
   - The counter will read "0:00:00".
3. Press C.MEMORY.
   - The M indicator will light on the display panel.
4. When you wish to return to that point, press Stop and then Rewind.
   - The tape will rewind and stop at about "0:00:00" automatically.
5. To cancel the Counter Memory mode, press C.MEMORY again.

Next Function Memory

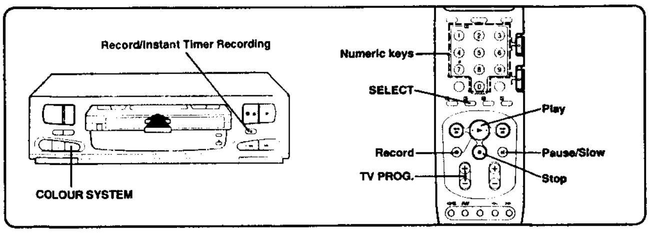
Your recorder can memorise what to do after rewind.
During Stop:

For automatic start of playback after the tape is rewound:
1. Press Rewind.
2. Press Play within 2 seconds.

For automatic power off after the tape is rewound:
1. Press Rewind.
2. Press OPERATE within 2 seconds.

For automatic timer standby after the tape is rewound:
1. Press Rewind.
2. Press TIMER within 2 seconds.

Recording



Basic Operations

Preparation
- Turn on the TV.
- Select VIDEO channel (or AV mode).

1. **Load a cassette.**
  - The recorder power will come on automatically.
  - Select the appropriate colour system by pressing the COLOUR SYSTEM button.(☞ p.11)

2. **Press TV PROG. or the numeric keys to select the channel you wish to record.**

3. **Press Record and Play simultaneously.**

4. **Press Pause/Slow to pause recording.**

5. **Press Play to resume recording.**

6. **Press Stop to stop recording.**

To Watch Another Programme While Recording

During Record:

1. Use the channel controls on the TV to select the other channel you wish to view.
   - The programme selected with the TV's channel controls will appear on the TV screen while the one selected with the video recorder's channel controls will be recorded on the tape.

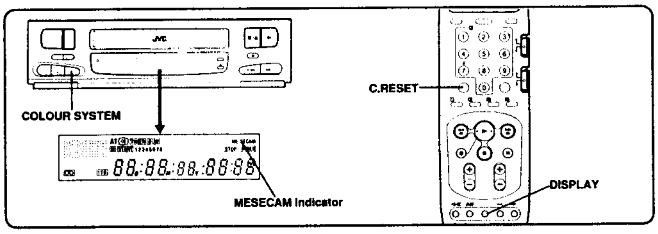
Instant Timer Recording (Off Timer)

You can start a recording and then set the recorder to shut off automatically after a set duration.

During Record:

1. Press Record on the recorder. "ITR" and "0:30" indications appear, advising that power will switch off after 30 minutes.
2. Press Record again to delay the off-time by 30-minute increments (up to 4 hours).
   - For more precise setting, use the remote control's SELECT and TV PROG. buttons to set the exact time required (possible up to 4 hours and 59 minutes).

NOTES:
- To start recording with the recorder's Record button, press it once on its own.
- After pause, when recording is resumed, a few frames recorded before the pause may be overlapped by the new recording. This is meant to reduce picture distortion and is not a malfunction.
- The recorder automatically stops when record-pause continues for more than 5 minutes.
- If the Record button does not work, check to see if the cassette's safety tab has been removed.
- The channel cannot be changed while recording is in progress. To change the channel, engage the record-pause mode, then change the channel.
- The recorder automatically rewinds when the end of the tape is reached during recording.
- When a PDC adapter is connected to the recorder and a PDC programme is being broadcast on the selected channel, " ⓅⒹ " mark appears on the display panel. ☞ p. 17 for information on PDC.



Other Functions

Setting of Colour System button

You can also record SECAM signals, or play back a MESECAM tape on this recorder.
- Press COLOUR SYSTEM so that the MESECAM indicator appears on the display panel.
- When recording PAL signals or playing back a PAL tape, press COLOUR SYSTEM again until the MESECAM indicator disappear.

Elapsed Recording Time Indication

When you need to know the exact time of a recording.
1. Press DISPLAY until a counter reading appears on the display panel.
2. Press C.RESET before starting recording or playback.
   - The counter will be reset to "0:00:00" and show the exact elapsed time as the tape runs.

Display Button

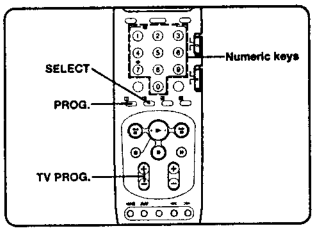
When you wish to check the time, date, or counter reading
1. Press DISPLAY to display the current clock time.
2. Press DISPLAY again to display the current date.
3. Press DISPLAY again to display the counter reading.

Preparation for ShowView Timer Programming

What is ShowView?

For timer-recording to take place, information such as the channel, date, start time and stop time of the programme you wish to record, must be programmed into the recorder's timer memory. The ShowView system condenses all this information into a simple ShowView code number 4 to 9 digits long.

Since the ShowView number contains information on the channel number, if you live in an area that uses channel numbers that are different from those listed in your TV directory, these "differences" must be input into the remote control. This process is called "Channel Mapping" (CH MAP).



CHECK THE GUIDE PROG. NUMBERS

Preparation
- Make sure you have set the clock. (☞ p. 6)
- Make sure you have set the tuner. (☞ p. 7)
- Get a TV schedule listing (magazine, newspaper, etc.) which carries ShowView code numbers.

[A] Find out the channel position numbers your recorder tunes to when you use the TV PROG. –/+ buttons (the positions you stored on page 7) and write them into the list.

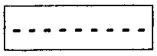
Example: 1, 2, 3, 4, 6, 8, 10, 12

[B] Look through the TV listing and find out the broadcast station name of each of the channels.

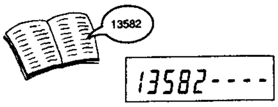
[C] Use the ShowView numbers to find out the GUIDE PROG. numbers for each of the stations.

How to check:

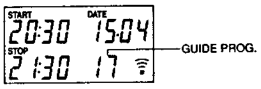
1. **Press PROG.**



2. Press the appropriate numeric keys to enter the ShowView number for a programme as it appears in your TV listing.
- Make sure the ShowView number is for a programme which has not been broadcast yet.



3. Press SELECT.



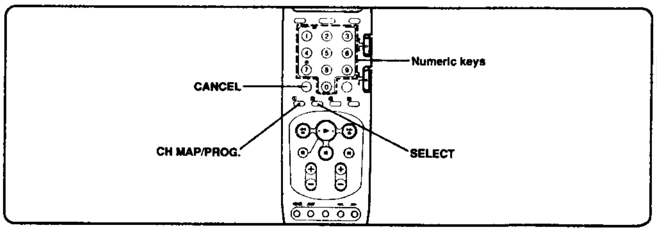
- The number that appears as the channel number is the GUIDE PROG. number for that station. Write it into the list.

ATTENTION
- When you press the SELECT button in step 3, "Err(or)" may appear on the LCD.
  This may mean that...
  - you entered a ShowView number for a programme which has already passed.
  - the GUIDE PROG. number for that station is a 3-digit number.
- For 3-digit GUIDE PROG. numbers, refer to your TV listing or consult your JVC dealer.

4. Press PROG. and display the clock time.
- Repeat steps 1– 4 and check the GUIDE PROG. number for each of the channels your recorder receives.

[A] Channel on your recorder (TV PROG. number)	[B] Station name	[C] GUIDE PROG. number
(ex.) 1	ARD	1
2	ZDF	2
3	WDR	17

[D] In cases where the channel number your recorder receives [A] and the GUIDE PROG. number [C] for that station do not match, it is necessary to make changes in the remote control's Channel Map. (continued on next page)



INPUT GUIDE PROG NUMBERS INTO REMOTE

1. **Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.**

GUIDE PROG.
TV PROG.
--

2. **Press the appropriate numeric keys to enter the GUIDE PROG. number ([C] column in your list).**

Ex.: For "1", press
0, 0, 1.
For "10", press
0, 1, 0.

GUIDE PROG.
TV PROG.
017

3. **Press the appropriate numeric keys to enter the channel number your recorder receives that station on. (TV PROG. number, [A] column in your list.)**

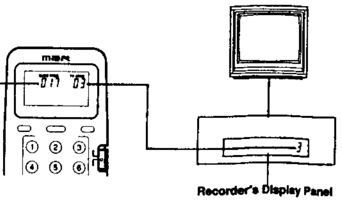
Ex.: For "3", press
0, 3.

GUIDE PROG.
TV PROG.
017
03

4. **Press SELECT.**
- To input other channels into the Channel Map, repeat steps 2 – 4 above.

5. **Press CH MAP and display the clock time.**

Ex.: From column [C] in the list: The GUIDE PROG. number for WDR is "17".
From column [A] in the list: The TV PROG. number for WDR is "3".



Recorder's Display Panel

TO CHECK CANCEL GUIDE PROG NUMBERS IN THE REMOTE

1. Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.

GUIDE PROG.
TV PROG.
--

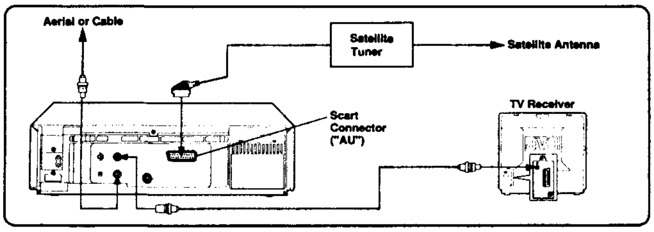
2. Press SELECT until the GUIDE PROG. number you wish to check or cancel is displayed.

GUIDE PROG.
TV PROG.
017
03

To Cancel:
3. Press CANCEL.
4. Press PROG. and display the clock time.

NOTES:
- When you move to another area, be sure to make changes in the Channel Map as necessary.
- When the remote control's batteries are replaced, the time or Guide Channel numbers you have set may be erased. If this happens, reset them again.

Preparation for ShowView Timer Programming (cont'd)



TO RECORD SATELLITE PROGRAMMES

Timer programming is also possible for programmes received via satellite tuner.

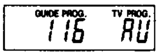
Preparation

1. **Connect the satellite tuner as illustrated to the "AU" (Scart) connector.**

2. **Press CH MAP until the Channel Map display (below) appears in the remote control's LCD.**

GUIDE PROG.
TV PROG.
- - -
- -

3. **Press the appropriate numeric keys to enter the GUIDE PROG. and TV PROG. numbers as follows:**
- For GUIDE PROG., enter the GUIDE PROG. numbers of the satellite stations that are receivable through your satellite tuner.
- For TV PROG., always enter "00". When "00" is entered, "AU" will appear in the LCD.



4. **Press SELECT.**
- To input other satellite stations into the Channel Map, repeat steps 3 – 4 above.

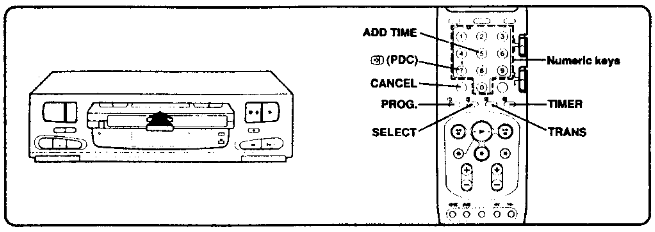
5. **Press CH MAP and display the clock time.**

Operation

1. Turn on the satellite tuner and select the channel you wish to record.
2. Enter the ShowView number in the same way as shown in steps 1 – 6 of ShowView Timer Programming on p.15.

NOTE:
- After selecting the programme you wish to record from your satellite tuner, set the system's timer. If your satellite tuner does not have a timer, leave it switched on.

Timer-Recording — *ShowView Timer Programming* —



The built-in ShowView programming system greatly simplifies timer programming because you won't have to enter all the data that is usually necessary (such as date, start and stop time, and channel).

TIMER PROGRAMMING IS NOT POSSIBLE UNLESS THE CLOCK HAS BEEN SET.

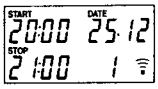
Preparation

Make sure you have set the GUIDE PROG. numbers (☞ p.12 or 14).
- Insert a cassette with the safety tab in place. The recorder power will come on automatically.
- Select the appropriate colour system by pressing the COLOUR SYSTEM button (☞ p.11)

1. **Press PROG.**

2. **Press the appropriate numeric keys to enter the ShowView number for the TV programme you wish to record.**
- For ShowView numbers, refer to your newspaper or TV directory.

3. **Press SELECT.**
- The LCD will show the data for the ShowView number you just entered.
- If the entered ShowView number is not proper, "Err" appears on the LCD. Check the ShowView number again and re-enter it.
- If a PDC adapter is connected to the recorder and you wish to take advantage of PDC recording (☞ p.17), press ⊛ (the numeric key "7") so that " ⊛ " appears on the LCD.



WEEKLY program: After step 3, press numeric key "9".
DAILY (Mon. – Fri.) program: After step 3, press numeric key "8".

4. **Press TRANS with the remote control directed toward the recorder's Remote Sensor window.**

5. **Press PROG.**
- The LCD returns to the clock display and the entered data will be automatically cleared.
- If you need to set another program, repeat steps 1 – 5.

6. **Press TIMER.**
- The recorder will enter the Timer mode and power will go off.

TO DELAY THE STOP TIME

After you press SELECT in step 3, press the ADD TIME button. Each time the ADD TIME button is pressed, the Stop time is delayed by 5 minutes (5 minutes of recording time is added). You can easily compensate for anticipated programme schedule delays this way.

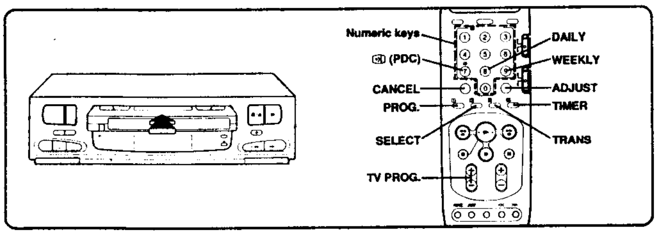
TO MAKE CORRECTIONS

- In step 2, press CANCEL to backspace and re-enter the correct ShowView number.
- After checking the data in step 3, press PROG. twice and re-enter the correct ShowView number.
- After checking the data in step 3, if you want to delay the stop time, etc. press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

To check, cancel and replace programs, ☞ p.16.

To use the recorder after setting to the Timer mode, ☞ p.16.

Timer-Recording (cont'd) — *LCD Timer Programming* —



The LCD timer programming lets you input all necessary settings manually. It's helpful if the ShowView number for the TV programme you want isn't readily available.

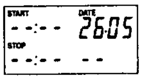
Preparation

- Insert a cassette with the safety tab in place. The recorder power will come on automatically.
- Select the appropriate colour system by pressing the COLOUR SYSTEM button (☞ p.11)

1. **Press PROG. twice.**

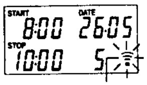
2. **Press numeric keys to input the date.**

Ex.: For 26th May, press 2 6 0 5.



3. **Press numeric keys to input the start time, stop time and channel.**

Ex.: For 8:00, press 0 8 0 0.



Transfer-ready mark

WEEKLY program: After you input the channel and the transfer-ready mark appears on the LCD, press numeric key "9".
DAILY (Mon. – Fri.) program: After you input the channel and the transfer-ready mark appears on the LCD, press numeric key "8".

- If a PDC adapter is connected to the recorder, and you wish to take advantage of PDC recording (☞ p.17), press ⊛ (the numeric key "7") so that " ⊛ " appears on the LCD.

4. **Press TRANS with the remote control directed to the recorder's Remote Sensor window.**

5. **Press TIMER.**
- The recorder will enter the Timer mode and power will go off.

TO MAKE CORRECTIONS

- During steps 2 and 3, press CANCEL to backspace and input new data.
- After setting the channel in step 3, press SELECT to make the item you want to change blink, and input new data.
- Pressing PROG. clears the programmed data.

TO CHECK, CANCEL AND REPLACE PROGRAMS

To check preset programs:
1. Press ADJUST until the program settings are displayed on the display panel.
   - Program 1 is displayed with the number blinking.
2. Press SELECT to review the program contents in succession.
3. To check another program, press ADJUST again.

To cancel the program:

4. Press CANCEL.
   - You can press CANCEL at any stage while the program is open.

To replace a program:

5. Use the SELECT and TV PROG. buttons to input new data.

TO USE THE RECORDER AFTER SETTING TO THE TIMER MODE

For safety, your recorder disables all other functions while in the Timer mode.
- Press TIMER to disengage the Timer mode.
- To re-engage the Timer mode, press TIMER.

NOTE:
- If you are using a satellite tuner and wish to timer-record satellite programmes, make sure to input "0" for the channel number in step 3 to make "AU" appear.

Other Functions

Error Indications

The following error indications may appear on the recorder when you press the TIMER button to engage the Timer Standby mode. Here's why, and what you should do.

- "TIMER" and "▭" on the display panel continue blinking.

WHY: There is no cassette in the recorder.
WHAT TO DO: Insert a cassette.

- The cassette is automatically ejected. "TIMER" and "▭" continue blinking.

WHY: The inserted cassette has its safety tab removed.
WHAT TO DO: Insert a cassette with its safety tab intact. Or cover the safety tab hole of the cassette with adhesive tape and re-insert it. ☞ p.21.

- "TIMER" blinks for 10 seconds and the Timer Standby mode is cancelled.

WHY: There are no preset programs in memory, or they have all been incorrectly preset.
WHAT TO DO: Check the programmed data and re-program it as necessary. Press TIMER again.

Other Indications

- "TIMER" steady lit (with clock display).

WHY: The recorder is in the Timer Standby mode. This is the normal display you should see when you press the TIMER button.

- " " and "TIMER" steady lit.

WHY: Normal display while timer-recording is in progress.

- The cassette was ejected, with power off and "TIMER" and "▭" are blinking.

WHY: This means that the end of the tape was reached while timer-recording was in progress. Therefore, the preset program may not be recorded in its entirety.

- "0:00" blinking.

WHY: This means the clock must be set. It's displayed when time-keeping is terminated due to a power failure or because the recorder's power plug was pulled from the AC outlet.
WHAT TO DO: Set the clock. ☞ p.6.

- If power was interrupted, it's also likely that all preset timer programming data has been erased. Please check and re-program as necessary.
- "-- -- -- -- --" is displayed for about 5 seconds when the TRANS button is pressed.

WHY: Data was not successfully transferred. The program may have been incorrectly preset, or the recorder's clock has not been set, or all the recorder's timer programs (1 – 8) are preset.
WHAT TO DO: Check the LCD program, and re-program as necessary. Transfer the correct data. Or cancel unnecessary programs, and transfer again.

PDC Recording

Now available from some TV stations, PDC (Program Delivery Control) is a service designed to assure safe, accurate timer-recording. With this system, special code signals are transmitted together with the audio/video signals. These code signals control your video recorder and have precedence over advertised times you preset in the timer. This means that your recorder will start and stop recording when the preset TV programmes actually start and end — even if the broadcast time of a preset TV programme is changed.

TO USE PDC SERVICE
- Connect JVC's optionally available PDC adapter VU-V115E to the PDC/VPS connector of the recorder.
- During timer programming, press the ⊛ button (the numeric key "7") so that "⊛" appears on the display panel.
- During ShowView or LCD timer programming, press the ⊛ button (the numeric key "7") before transferring the programme data to the recorder.
- If you wish to cancel "PDC", press the ⊛ button (the numeric key "7") again. Pressing the ⊛ button alternates the setting.

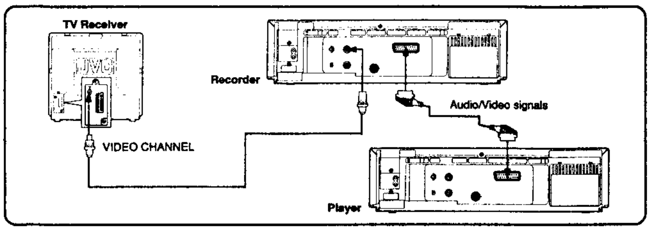
NOTES:
- When you enter programmes, set the start time exactly as advertised in the TV listing. A different time than advertised will result in no recording.
- When the optional adapter VU-V115E is connected to the recorder, VPS (Video Program System) recording is also possible in certain areas.

Locking The Recorder's Controls

To avoid unwanted operation and prevent accidental recording...
1. Press the remote control's OPERATE button to turn the recorder's power off. Keep this button pressed for about 2 more seconds after the power LED indicator has gone off.
   - The Child Lock indicator (–) will appear on the display panel.
2. Child Lock is cancelled when you switch the recorder's power on with the remote's OPERATE button.
   - Pressing the TIMER button during timer-recording also cancels the Child Lock mode.

NOTES:
- While Child Lock is engaged, make sure you keep your remote control in a safe place inaccessible to children.
- Timer-recording is possible in the Child Lock mode. After timer-recording is done, Child Lock remains in effect.

Editing



Editing To/From Another Recorder

Preparation
- Connect the player's AUDIO/VIDEO connector to the recorder's AUDIO/VIDEO connector.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system. (☞ p.11)

	Player	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode. ■ With this video recorder, press the numeric key "0". "AU" will appear instead of a channel number.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Start recording where you want to start editing, with this recorder, by pressing the Play button.
6		To stop editing temporarily, press the Pause button.

Repeat steps 4 through 6 to continue editing.

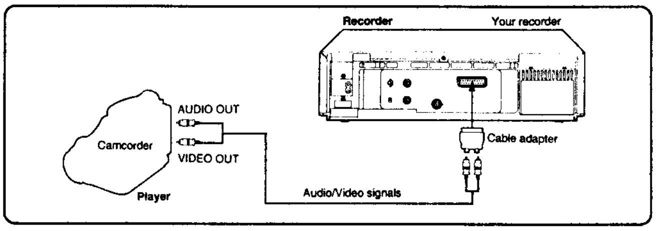
7	To stop editing, press the Stop button.

Remote A/B Code Switching

The remote control is capable of controlling two JVC video recorders independently; one set to respond to your remote control's A code control signals and another set to respond to B code control signals. The remote control is preset to send A code signals because your video recorder is initially set to respond to A code signals. You can easily modify your video recorder to respond to B code signals.

1. Unplug the recorder's power cord from the AC outlet.
2. Set the A/B code switch to B.
3. Plug the power cord back into the AC outlet. Do not use other remote controls at this stage.
4. Turn the recorder power on using the remote control's OPERATE button. The recorder will now only respond to B code signals.

NOTE:
Some TV sets may malfunction in response to the B mode. If this happens switch back to the A mode.



Editing From A Camcorder

Preparation
- Connect the camcorder's A/V output connectors to the recorder's AUDIO/VIDEO connector.
- Press your recorder's COLOUR SYSTEM button to select the appropriate colour system (☞ p.11).

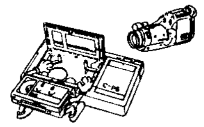
	Camcorder	Recorder
1	Load the source tape.	Load the recording tape.
2		Select the external input mode by pressing the numeric key "0". "AU" will appear instead of a channel number.
3		Press and hold down the Pause button while you press the Record button to enter the Record-Pause mode.
4	Play back the source tape to search for a scene to be edited.	
5		Press the Play button where you want to start editing.
6		To stop editing temporarily, press the Pause button.

Repeat steps 4 through 6 to continue editing.

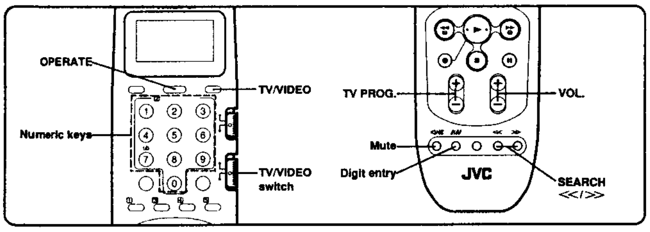
7	To stop editing, press the Stop button.

To Watch A Compact VHS Tape

Compact VHS camcorder recordings (PAL) can be played on your video recorder. Place the recorded cassette into a C-P6 Cassette Adapter and it can be used like any full-sized VHS cassette.



Using The Remote Control For TV Operation



TV Code Setting

Your remote control can operate the basic functions of your TV set. In addition to JVC televisions, other manufacturers' televisions listed on the right can also be controlled by setting the remote control to "TV". If your television is a JVC (Code 1), you don't have to set the TV code in step 2.

1. Set the TV/VIDEO switch to "TV".
2. While holding down the OPERATE button, press the numeric keys corresponding to the code number for your TV's brand.
   - Press OPERATE to turn the TV power on.
   - Press TV/VIDEO to switch the TV between TV and VIDEO (or AV) mode.
   - Press TV PROG. to select the TV's channel.
   - Press VOL. to adjust the TV's sound volume.
   - Press Mute to mute the TV's sound.
3. To operate your recorder, set the TV/VIDEO switch back to "VIDEO".

NOTE:
- The TV PROG. button does not function with televisions using Code 2.
- The TV/VIDEO button does not function with televisions using Code 3.
- With some televisions, the OPERATE button functions only to turn the TV power off, and the TV/VIDEO button functions only to switch the TV to the VIDEO (AV) mode.
- Whenever you replace batteries in the remote control, it is necessary to re-set the TV code if your television is not a JVC TV.

IMPORTANT
Although the provided remote control unit is compatible with JVC televisions, as well as many TV models manufactured by others, it is possible that the provided remote control will not work with your TV, or in some instances, will have limited function capability.

CODE	TV BRAND NAME
1	JVC
2	BRANDT, NORDMENDE, SABA, TELEAVIA, TELEFUNKEN, THOMSON
3	FERGUSON
4	PHILIPS
5	BLAUPUNKT, GRUNDIG
6	SONY
7	PANASONIC
0	GRAETZ, ITT, LUXOR, SALORA, SELECO

To Control Your Television With Additional Buttons

The numeric keys can also be used to select the TV's channel by setting the remote control to the TV mode.

1. Set the TV/VIDEO switch to "TV".
2. Use the numeric keys and the Digit entry button or the SEARCH <</>> buttons to select the TV's channel.
   - With televisions using Code 1, 3, 4, 6 or 7 the Digit entry button corresponds to the 1-digit/2-digit entry switching button (often labelled -/--) of your TV's remote control.
   - With televisions using Code 1, 5 or 0, the SEARCH << button corresponds to the 10 + button, and the SEARCH >> button, to the 20 + button of your TV's remote control.

NOTE:
The way these buttons are used is determined by your TV. Use these buttons as instructed for your TV's remote control.

Precautions

Please follow these safety precautions. Not doing so may result in damage to the recorder, remote control, or video cassette.

- **Avoid extreme heat and direct sunlight.**
- **Avoid extreme cold.**
- **Avoid extreme humidity.**
- **Avoid dust.**
- **Avoid places subject to vibrations.**
- **Avoid strong magnetic fields.**
- **Do not block the recorder's ventilation openings.**
- **Do not place anything heavy on the recorder or remote control.**
- **Do not place anything which might spill on top of the recorder or remote control.**
- **Do not place the recorder on cushions, pillows, or thick carpeting.**
- **Use the recorder in a stable, horizontal position only.**

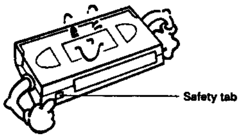
Beware of moisture condensation
Moisture in the air will condense on the recorder when you move it from a cold place to a warm place, or under extremely humid conditions — just as water droplets form on the surface of a glass filled with cold liquid. Moisture condensation on the head drum will cause damage to the tape. In conditions where condensation may occur, keep the recorder's power turned on for a few hours to let the moisture dry.

When transporting
- Be sure to remove cassette from recorder before packing.
- Avoid violent shocks to the recorder during packing and transport.

Place cassettes in cassette cases and store vertically.

Special Note On Video Cassettes

To prevent accidental recording on a recorded cassette, remove its safety tab. To record on it later, cover the hole with adhesive tape.



Specifications

GENERAL

Power requirement : AC 220 – 240 V∼, 50/60 Hz
Power consumption : 19 W
Temperature
Operating : 5°C to 40°C
Storage : –20°C to 60°C
Dimensions (WxHxD) : 360 x 94 x 339 mm
Weight : 4.4 kg
Format : VHS PAL standard

VIDEO/AUDIO

Signal system : PAL-type colour signal and CCIR monochrome signal, 625 lines/50 fields
Recording system : Rotary, slant azimuth two-head helical scan system
Signal-to-noise ratio : 43 dB (Rohde & Schwarz noise meter)
Horizontal resolution : 250 lines
Frequency range : 70 Hz to 10,000 Hz
Input/Output : 21-pin scart connector

TUNER/TIMER

TV channel storage capacity : 80 positions (+ AUX position "AU")
Channel coverage : VHF 47 – 89/104 – 300/302 – 470 MHz
UHF 470 – 862 MHz
Aerial output : UHF channel 36 (Adjustable 32 – 40)
Memory backup time : Approx. 3 min.

ACCESSORIES

Provided accessories : Aerial cable,
Infrared remote control unit,
"R6" battery x 2,
AC power cord

Design and specifications subject to change without notice.

SECTION 1
DISASSEMBLY

1.1 DISASSEMBLY

1.1.1 Top cover

1.Take Out 4 screws Ⓐ and a screw Ⓑ.
2.To remove the top cover,slide in direction of arrow and lift away.

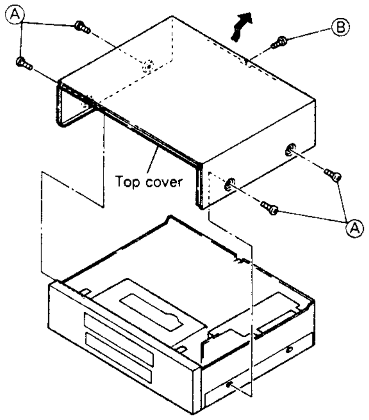


Fig. 1-1-1 Top cover

1.1.2 Front panel assembly

1.Remove the top cover.
2.Carefully disengage 2 tabs ⓐ of the Front panel assembly from the upper side of the chassis.
3.Pull the front panel assembly toward you to disengage 3 tabs ⓑ of the front panel assembly from the bottom of the chassis then remove the front panel.

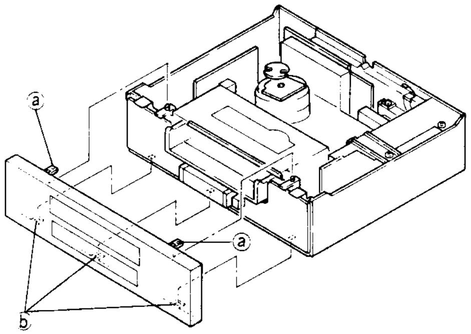


Fig.1-1-2 Front panel assembly

1.1.3 Bottom cover

1.Remove the top cover.
2.Disengage 9 claws ⓐ from the bottom of the chassis.
3.Disengage the bottom cover from the bottom of the chassis.

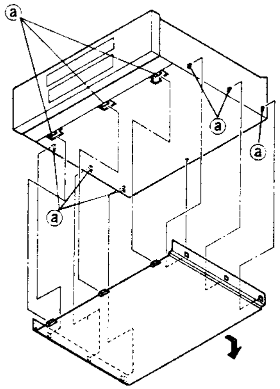


Fig.1-1-3 Bottom cover

1.1.4 FRONT board assembly

1.Remove the top cover and front panel.
2.Disengage 5 claws ⓐ from the chassis.
3.Disengage 5 claws ⓑ,then remove the FRONT board assemby in direction of arrow.

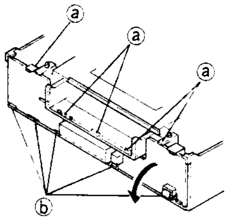


Fig.1-1-4 Front board assembly

1.1.5 SWITCHING REGULATOR board assembly

1. Remove the top cover.
2. Take out 3 screws Ⓒ and a screw Ⓓ, then remove the bracket.
3. Take out a screw Ⓔ.
4. Disengage 2 tabs ⓐ as shown in Fig.1-1-6 and remove the SWITCHING REGULATOR board assembly.

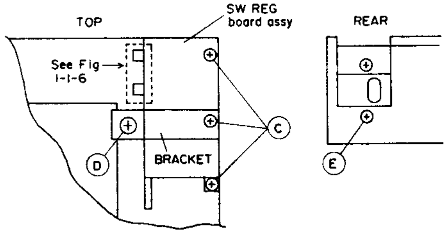


Fig.1-1-5 SWITCHING REGULATOR board assembly-(1)

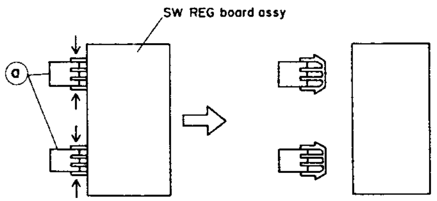


Fig.1-1-6 SWITCHING REGULATOR board assembly-(2)

1.1.6 Cassette housing assembly

1. Remove the top cover and front panel.
2. Take out 4 screws Ⓕ and 2 screws Ⓖ.
3. Disengage 2 claws ⓐ from the holder.
4. Remove the cassette housing assembly in direction of arrow.

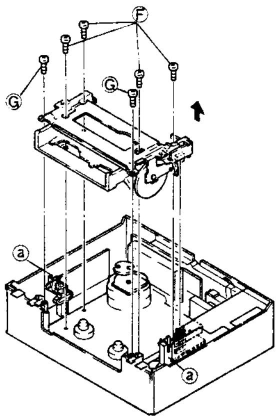


Fig.1-1-7 Cassette housing assembly

1.1.7 PRE/REC board assembly

1. Remove the top cover.
2. Take out 2 screws Ⓗ.
3. Disconnect connector CN502 from the PRE/REC board assembly
4. Remove the PRE/REC board assembly with the shield in the direction of arrow.

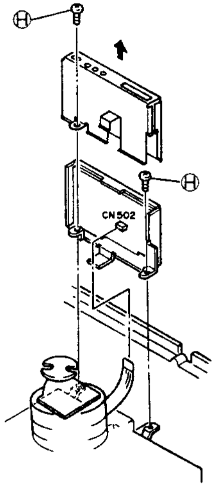


Fig.1-1-8 PRE/REC board assembly

1.1.8 Drum assembly

1. Remove the top cover.
2. Disconnect a connector of stator assembly.
3. Take out 3 screws Ⓙ, then remove the drum assembly

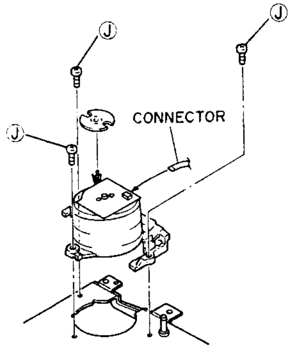


Fig.1-1-9 drum assembly

1.1.9 Main deck assembly

1. Remove the top cover, front panel, and cassette housing assembly.
2. Take out a screw Ⓚ and disconnect 3 connectors ⓐ from the chassis.
3. Remove the main deck assembly in direction of arrow.

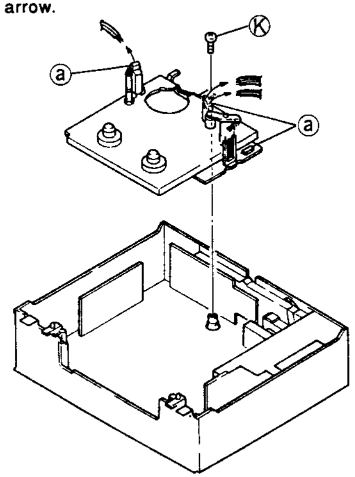


Fig.1-1-10 Main deck assembly

1.1.10 MAIN board assembly

1. Remove the top cover, front panel, SWITCHING REGULATOR, cassette housing and main deck.
2. Take out 2 screws Ⓛ and disengage 2 claws ⓐ from the chassis.
3. Remove the MAIN board assembly in direction of arrow.

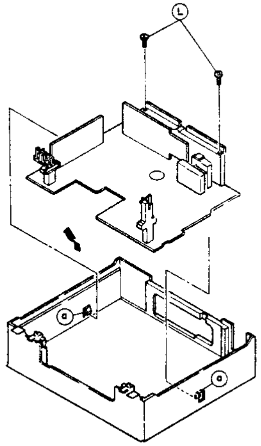


Fig.1-1-11 MAIN board assembly

1.1.11 Cassette housing installation

Note: *Observe the mechanical phase and position (see figure)when installing the cassette housing assembly. If these are incorrect, the system will not operate properly even when tape is inserted.*

1. Check that the marks of the control cam and pinch roller cam are aligned. If necessary, turn the worm clutch by hand to adjust the position.

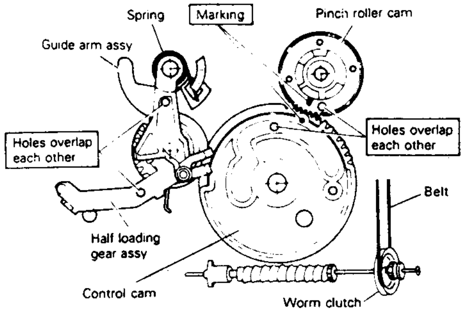

Spring
Marking
Pinch roller cam
Guide arm assy
Holes overlap each other
Holes overlap each other
Belt
Half loading gear assy
Control cam
Worm clutch

Fig. 1-1-12 Control cam and pinch roller cam position

2. Confirm that the clutch of the worm clutch assembly is locked. If necessary, engage the locked.

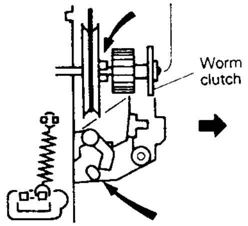

Worm clutch

Fig.1-1-13(a) Not locked

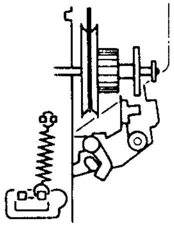


Fig.1-1-13(b) Lock engaged

3. Install the front panel as shown in Fig. 1-1-12 and re-engage the tabs. Supply power and use spare cassette to check for normal loading and eject operations.

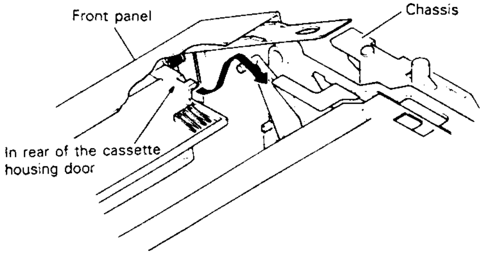

Front panel
Chassis
In rear of the cassette housing door

Fig.1-1-14 Cassette housing door

1.2 SERVICE POSITION -1

1. Remove the top cover, front panel and FRONT board assembly.
2. Take out 5 screws Ⓐ and a screw Ⓑ then remove the bracket.
3. Take out 2 screws Ⓒ , a screw Ⓓ and a screw Ⓔ.
4. Disengage 2 claws ⓐ from the chassis.
5. Remove the mechanism assembly(including cassette housing),MAIN board assembly and SWITCHING REGULATOR board assembly out of the chassis as shown in Fig.1-2-2.
6. Turn over the mechanism assembly and MAIN board assembly.
7. Connect the flat wire(CN1) of the FRONT board assembly to the MAIN board assembly.
8. Carry out checks & repairs as necessary as shown in.Fig.1-2-3.

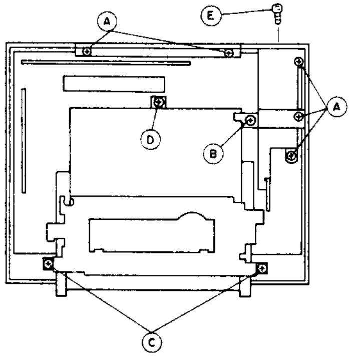


Fig.1-2-1

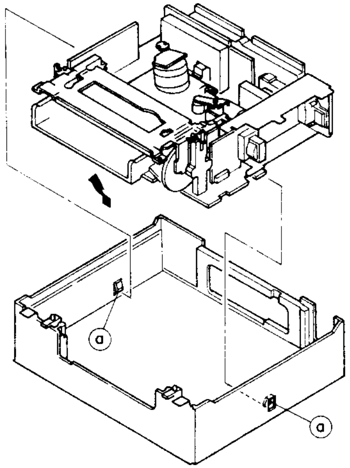


Fig1-2-2

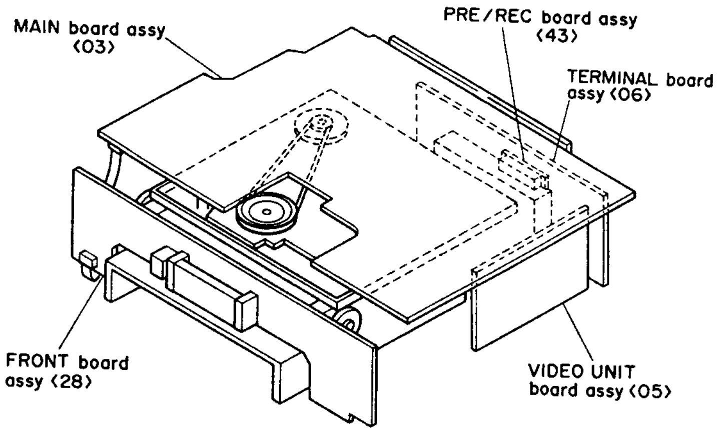

MAIN board assy <03>
PRE/REC board assy <43>
TERMINAL board assy <06>
FRONT board assy <28>
VIDEO UNIT board assy <05>

Fig.1-2-3

1.3 SERVICE POSITION -2

1.3.1 Connections for MAIN board and SWITCHING REGULATOR board assembly

1. After removing the SWITCHING REGULATOR board assembly from the chassis,connect the patch cord for check and repair as follows.

NO.	CONNECTION	DISCRIPTION	CABLE PART NO.
①	SW.REG board CN1 ←→ MAIN board CN801	Pin 11	PEMCJ0978-111

Table 1-3-1 Patch cord list

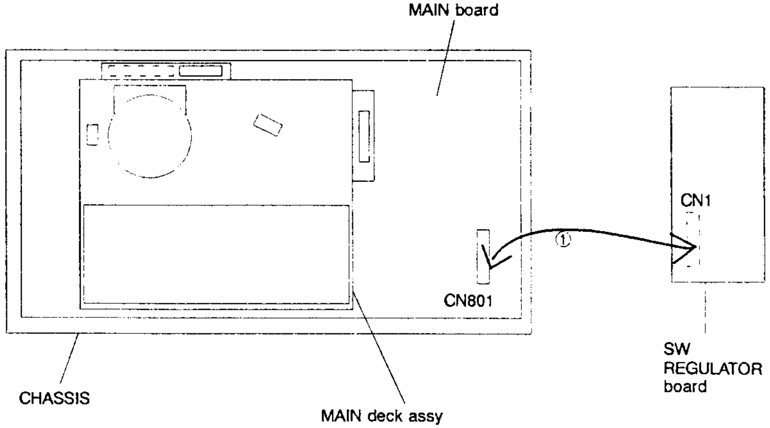

MAIN board
CN1
①
CN801
CHASSIS
SW REGULATOR board
MAIN deck assy

Fig. 1-3-1 Connections for patch cord

SECTION 2
MECHANISM ADJUSTMENT

2.1 PREPARATION

2.1.1 Precautions

1) Disconnect VCR from AC power before soldering.
2) Avoid imparting stress to wires when disengaging connectors.
3) Determine and correct the cause of difficulty before proceeding to adjustments. Do not disturb settings unnecessarily.
4) Use care not to damage tabs, claws, etc. during repairs.
5) Install the cassette housing assembly only when the mechanism is in the Eject or Stop mode position. In the Eject mode, the internal holder of the housing is fully raised. This is fully lowered in the Stop mode.
6) When installing the front panel assembly, be sure to engage the housing door with the door lever of the cassette housing assembly. If this is omitted, the door will not open at Eject and the cassette cannot be removed.
   See Sec.1 DISASSEMBLY.

2.1.2 Check without cassette housing

Mechanism operations can be observed easily by removing the cassette housing assembly. Note the following.

1) Disable the photo transistor sensor (END SENSOR) on the main-deck by applying an opaque cover.
2) Connect pins 2 and 3 of Main board connector CN601.
3) Select the desired modes with the operation buttons. However, notice that without tape, setting for the reverse direction modes produces the Stop mode after a few seconds due to absence of the reel sensor output.

2.1.3 Manual removal of loaded tape

In event of failure which leaves the tape in the loaded position, remove it by the following procedure.

1) Take off the top cover and main deck assy in order to wind the tape on the reel.
   See Sec.1 DISASSEMBLY.
2) Turn the mode motor belt by hand in the unloading direction to return the loading posts to the stop position, refer Fig. 2-1-1.

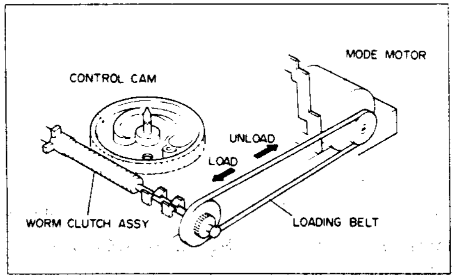

MODE MOTOR
CONTROL CAM
UNLOAD
LOAD
WORM CLUTCH ASSY
LOADING BELT

Fig. 2-1-1

3) From the bottom, turn the clutch unit by hand to wind the slackened tape onto the reel.

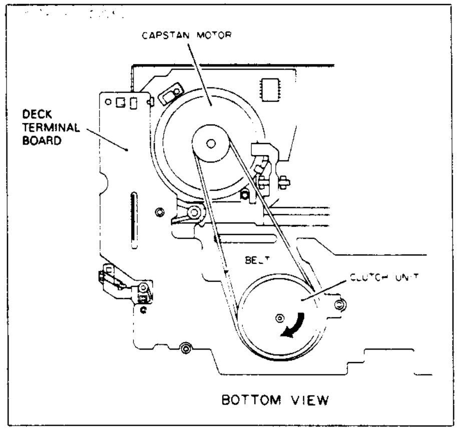

CAPSTAN MOTOR
DECK TERMINAL BOARD
BELT
CLUTCH UNIT
BOTTOM VIEW

Fig. 2-1-2

4) Turn the mode motor further to where the cassette holder begins moving in the unloading direction, then remove the cassette tape.

Note: ***Turn the mode motor and clutch unit alternately in order to avoid damaging the tape. It is important to avoid scratching the tape in the mechanism.***

2.1.4 Test equipment

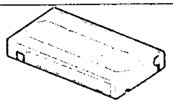
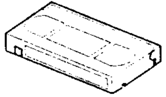
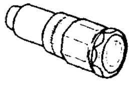
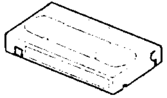
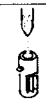
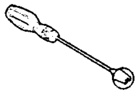
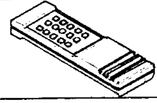
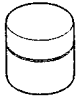
Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L	Torque gauge PUJ48075-2	Back tension cassette gauge PUJ48076-2
			
A/C head positioning tool PTU94010	Roller driver PTU94002	Presetting unit PTU94008	Grease PTU94014A
			

Table 2-1-1

2.2 MAIN MECHANISM PARTS

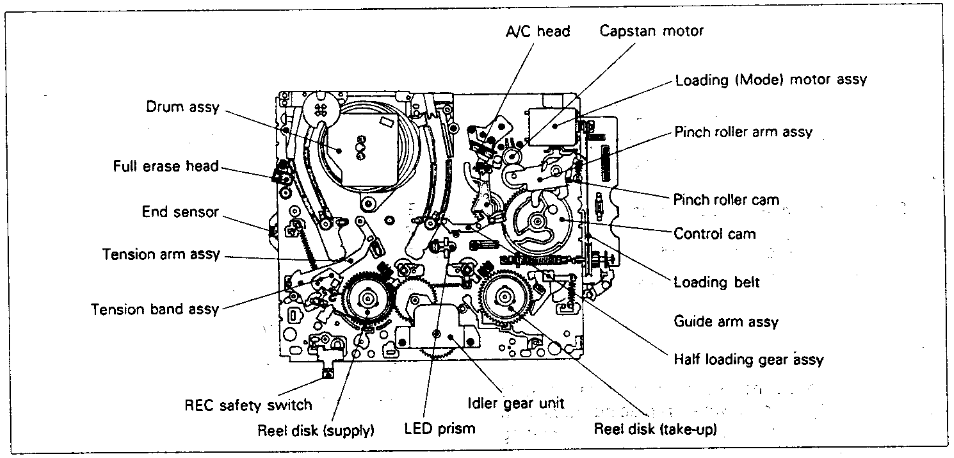

A/C head
Capstan motor
Loading (Mode) motor assy
Drum assy
Pinch roller arm assy
Full erase head
Pinch roller cam
End sensor
Control cam
Tension arm assy
Loading belt
Tension band assy
Guide arm assy
Half loading gear assy
REC safety switch
Idler gear unit
Reel disk (supply)
LED prism
Reel disk (take-up)

Fig. 2-2-1 Top view of main-deck

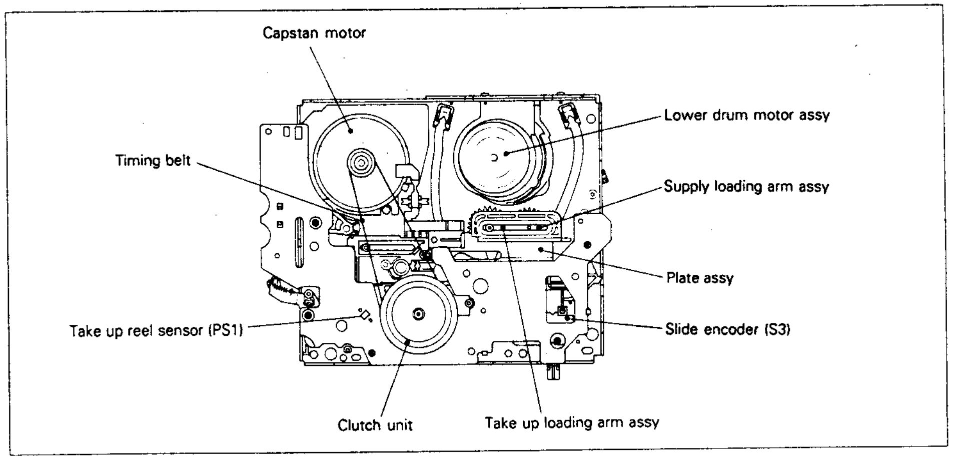

Capstan motor
Lower drum motor assy
Timing belt
Supply loading arm assy
Plate assy
Take up reel sensor (PS1)
Slide encoder (S3)
Clutch unit
Take up loading arm assy

Fig. 2-2-2 Bottom view of main-deck

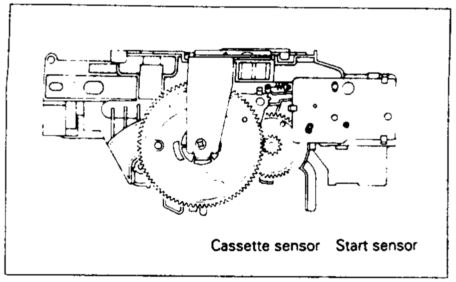


Fig. 2-2-3 Side view of cassette housing

2.2.1 Cleaning

Periodic cleaning of the tape transport system is desirable, but ordinarily not feasible in practice. Therefore, perform cleaning when a set is brought in for repairs or maintenance. Contamination of the video heads, tape guides and brushes can detract from playback picture quality and in extreme cases, even damage the tape. For cleaning, use a fine-mesh cotton cloth (about the texture of a white dress-shirt) moistened in alcohol.

- To clean the video heads, press the moistened cloth gently against the upper drum with fingertip and turn the drum by hand.
- Do not use a vertical stroke, as this may damage the heads.

2.2.2 Lubrication

Oil and grease do not normally require periodic replenshing. Apply only when replacing lubricated parts (also clean and replace lubrication of mating parts if soiled).
For parts and points to apply oil and grease, refer to the exploded views of the mechanism assembly.
Before oiling, clean with alcohol.
Apply one or two drops of oil.
Avoid excess oil.

1) Table 2-2-1 indicates the oil and grease used in this set. Use these or recommended locally available equivalents.

Category	Part No.
Oil	COSMO-HV56
Grease	KANTO-G-31KAV

Table 2-2-1

2) Grease is not required for a replacement cassette housing assembly, as this has been applied at the factory.

Note: *Stir grease that has been stored for an extended period.*

2.3 INSPECTION AND MAINTENANCE

This product employs rotary and moving parts which wear out in the course of usage. Periodic inspection, cleaning, lubrication and maintenance are therefore important for ensuring maximum performance. Worn parts must also be replaced as and when required.

2.3.1 Suggested servicing schedule for main components

The following table indicates the suggested period for such service measures as cleaning, lubrication and replacement. In practice, the indicated periods will vary widely according to environmental and usage conditions. However, the indicated components should be inspected when a set is brought for service and the maintenance work performed if necessary.
Also note that rubber parts may deform in time, even if the set is not used.

System	Parts Name	Operation hours						
		250	500	750	1000	1250	1500	2000
Tape Transport	Upper drum assy	★	★	★	O	★	O	O
	A/C head	★			O			O
	Pinch roller arm assy	★	★	★	★	★	★	★
	Full erase head							
	Tension arm assy							
	Lower drum assy							
	Capstan motor (Shaft)							
	Half loading gear assy							
	Guide arm assy							
Drive	Capstan motor							O
	Loading belt			O				O
	Mode motor assy			O				O
	Reel disk (Supply)			O				O
	Reel disk (Take-up)			O				O
	Clutch assy			O				O
	Worm clutch assy							O
	Plate assy							O
Others	Brush assy			O				O
	Tension band assy			O				O

★ : Cleaning
O : Inspection or Replacement if necessary

Table 2-3-1

2.4 MAIN PARTS REPLACEMENT AND ADJUSTMENT

2.4.1 Stator assembly

1) Take out 2 screws (A).
2) Raise the Stator Assembly in the direction indicated by the arrow to remove it (also remove the Inertia Roller).
3) Remove the flat cable.
4) To reinstall, first secure the flat cable, then insert 2 screws (A).
5) After reinstalling, be sure to perform switching point adjustment.

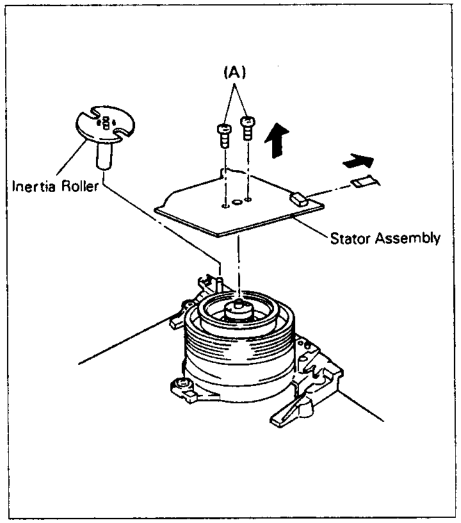


Fig. 2-4-1

2.4.2 Rotor assembly

1) Remove the Stator Assembly.
2) Take out 2 screws (B) and remove the Rotor Assembly.

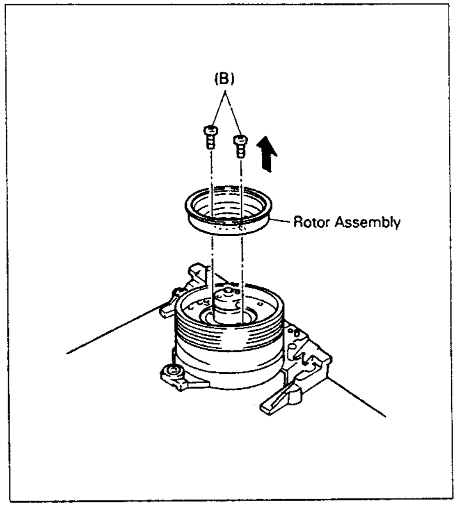


Fig. 2-4-2

Note: *A normal picture will not be obtained unless the phase is properly aligned when installing the Rotor Assembly. Also note there are three types of Rotors.*

3) Align the Upper Drum and Rotor Assembly phase as indicated in Fig. 2-4-3.

4) Overlap holes (a) of the Upper Drum with holes (b) of the Rotor Assembly (align holes in 3 locations) and secure with 2 screws (B) (see Fig. 2-4-3).

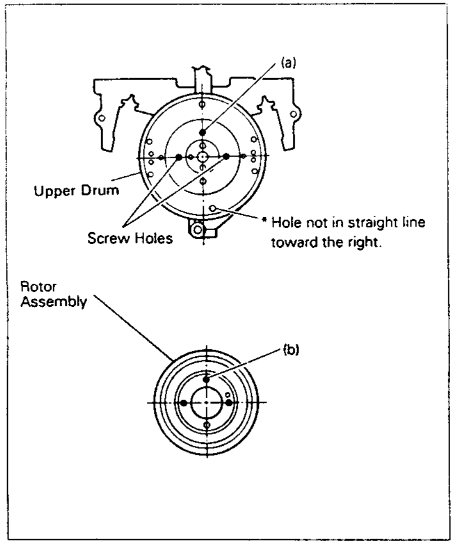

(a)
Upper Drum
Screw Holes
* Hole not in straight line toward the right.
Rotor Assembly
(b)

Fig. 2-4-3

2.4.3 Drum subassembly

1) Disengage the PRE/REC AMP board connector and flat cable.

2) Take out 3 screws (C) and remove the Drum Subassembly.

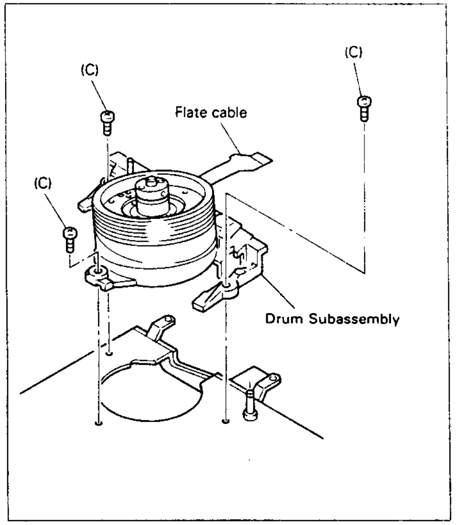

(C)
(C)
Flate cable
(C)
Drum Subassembly

Fig. 2-4-4

2.4.4 Upper Drum assembly

1. Removal

1) Remove the Stator and Rotor Assemblies.

2) Use a 1.5 mm hexagonal wrench to loosen the Collar Assembly screw and remove the Collar Assembly.

3) Remove the Upper Drum Assembly and use tweezers to remove the Washer.

Note: *As grease is applied to the Brush, use care to avoid contamination by dirt or other foreign matter. If the Brush is replaced, use care regarding top and bottom direction and be sure to apply the specified grease (PTU94014A) to the contact sections (2 locations).*

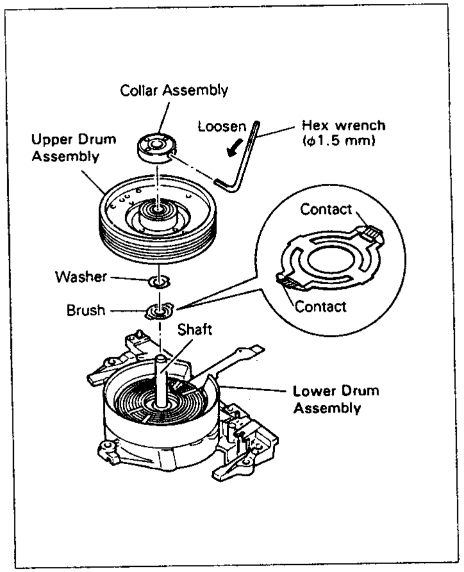

Collar Assembly
Upper Drum Assembly
Loosen
Hex wrench (φ1.5 mm)
Contact
Contact
Washer
Brush
Shaft
Lower Drum Assembly

Fig. 2-4-5

2. Installation

1) Use an air brush to clean the Lower Drum Assembly and the coil section of the new Upper Drum Assembly.

2) Set a new Washer on the Drum shaft (see Fig. 2-4-6).

Note: *Be sure to use the new Washer supplied with the replacement Upper Drum Assembly.*

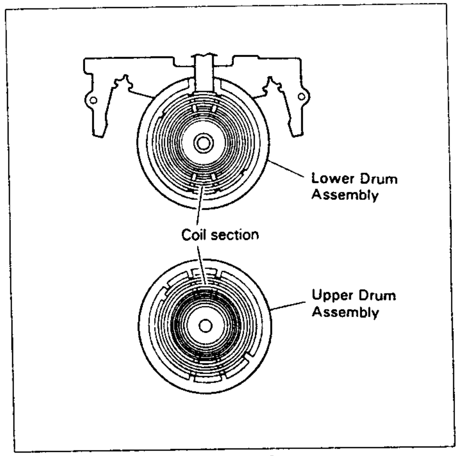

Lower Drum Assembly
Coil section
Upper Drum Assembly

Fig. 2-4-6

3) Note the top and bottom of the Collar Assembly and determine the position as indicated in Fig. 2-4-7.

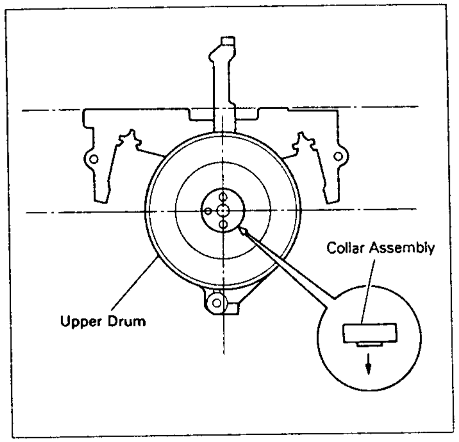

Collar Assembly
Upper Drum

Fig. 2-4-7

4) While pressing the Collar Assembly evenly from above with the fingertips, secure the hexagonal screw.

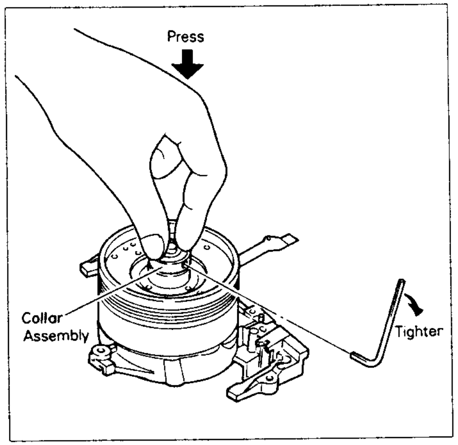

Press
Collar Assembly
Tighter

Fig. 2-4-8

5) After installing, gently turn the Upper Drum by hand and confirm normal rotation.
6) Install the Rotor and Stator Assemblies.
7) Clean the Upper and Lower Drum Assemblies and perform the following adjustments;

- Switching Point Adjustment
- Interchangeability Adjustment (be sure to check EP mode)
- Recording color level Adjustment

2.4.5 Tension arm positioning

1) Remove the cassette housing, set the playback mode.
(Refer to 2.1.2 Check without cassette housing)
2) Turn the eccentric adjust pin to position the mark of the chassis with the tension arm tip as shown Fig. 2-4-9.

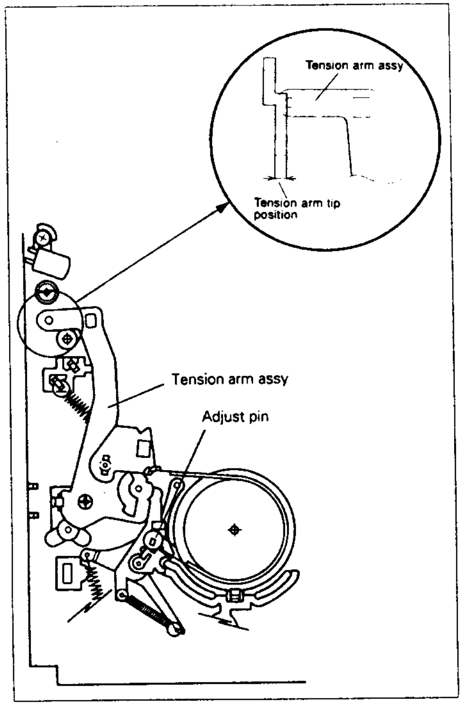

Tension arm assy
Tension arm tip position
Tension arm assy
Adjust pin

Fig. 2-4-9

Note: *Normally, if the tension post position is properly adjusted, the back tension will assume the correct value. Use the back tension cassette gauge and confirm playback tension is 35 g-cm to 48 g-cm (13.8 g-inch to 18.9 g-inch).*

2.4.6 Pinch roller cam position

1) Set the mechanism to the eject mode (cassette holder is locked in eject position).
2) Install the pinch roller cam so the largest hole near the gear teeth is aligned with the hole on the chassis.
3) Set the control cam on the deck with the hole in the groove aligned with the hole on the chassis. Observe that the small hole on the control cam and the mark on the pinch roller cam are aligned. (If the control cam does not fit readily, shift the loading arm and plate assembly within the range of mechanical play.)
4) Install the half-loading gear assembly with the hole aligned with the hole on the chassis. Secure with split washer.
5) Install the guide arm assembly with the hole aligned with hole on the chassis. Engage the spring properly.

Note: *This is the correct mechanical alignment to install the cassette housing. The cassette housing should also be in the eject position.*

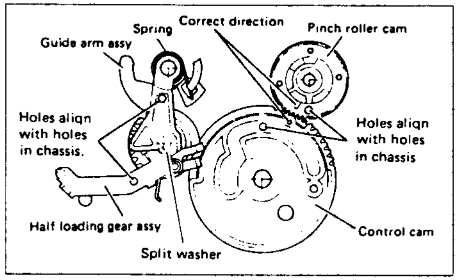

Guide arm assy
Spring
Correct direction
Pinch roller cam
Holes align with holes in chassis.
Holes align with holes in chassis
Half loading gear assy
Split washer
Control cam

Fig. 2-4-10

2.4.7 Audio/control head height

1) Adjust the 3 screws (screw ①,②,③ in Fig. 2-5-1) to set the audio/control head height to 6.6 mm (0.26 in). Adjust all screws equally.
2) Perform interchangeability adjustments to obtain the specified control pulse and audio signal levels.

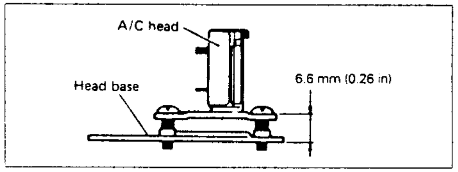

A/C head
Head base
6.6 mm (0.26 in)

Fig. 2-4-11

Notes:
- *It is very important to correctly adjust the control pulse and audio signal in addition to the mechanical tape path.*
- *Perform interchangeability adjustments after electrical adjustments.*

2.4.8 Loading arm and plate assembly position

1) Set for Eject mode and remove the deck terminal board.
2) Check that the preset hole of the plate assembly is in the preset position. Temporarily insert a 3 mm (0.12 in) screw to hold the position.
3) By hand, hold the loading arms in the unloading (inner) position and set the plate assembly from above.
4) Install Red and White split washers. Remove temporary screw.
5) Move the mode motor belt by hand and confirm mechanism operation.

Note: *Observe that the brake assembly pin is engaged with the plate assembly groove.*

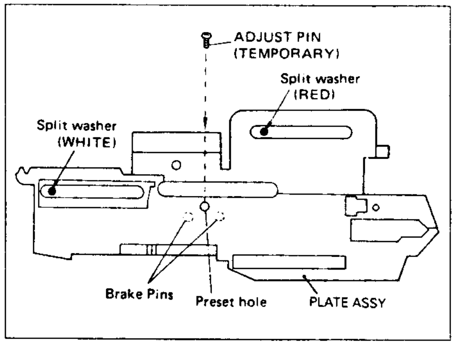

ADJUST PIN (TEMPORARY)
Split washer (RED)
Split washer (WHITE)
Brake Pins
Preset hole
PLATE ASSY

Fig. 2-4-12

2.4.9 Reel disk height

1) Measure the height of the reel disk above the main chassis.
2) Add or remove washers at the bottom of the reel disk to adjust for 12 mm (0.47 in). See Fig. 2-4-13.

Note: *This adjustment is normally not needed. Perform after replacing the reel disk.*

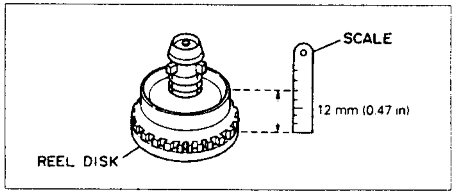

SCALE
12 mm (0.47 in)
REEL DISK

Fig. 2-4-13

2.5 TAPE INTERCHANGEABILITY ADJUSTMENT

Note: *This adjustment is extremely important. However, it is normally not required during routine service. Perform only after replacing major components (A/C head, drum assembly, etc.).*

2.5.1 Height and azimuth adjustment of A/C head

1) Connect the oscilloscope to the audio output jack on the rear of the deck.
2) Play back the stairstep portion (6 kHz, Mono) of the alignment tape.
3) Adjust Black Screw ② on the head base in Fig. 2-5-1 so that the output level is at a maximised.
4) Readjust Screw ① shown in Fig. 2-5-1 for maximum output.

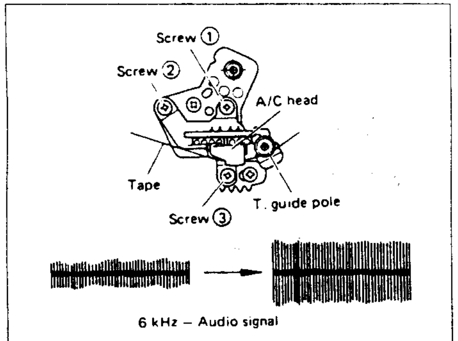


Fig. 2-5-1

2.5.2 Horizontal Position adjustment of A/C head

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the RF envelope appears, as in Fig. 2-5-4.
3) Set the neutral manual tracking position, by simultaneously press of the (+) and (-) tracking buttons.
4) If adjustment is required, slightly loosen screws ④ and ⑤. Set A/C head positioning tool on the A/C head adjusting boss as shown in Fig. 2-5-2.
5) Turn the tool first to position the A/C head fully toward the capstan. Then gradually return it toward the drum and stop at the position of maximum FM waveform output level as shown in Fig. 2-5-4.
6) Tighten screw ⑤. Remove the tool and tighten screw ④.
7) Eject the tape and then re-insert again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (+) button (count the number of pushes) until the maximum envelope is reduced to 1/2. Eject the tape and re-insert it again. Playback the Alignment Tape. Set the neutral manual tracking position. Push the tracking (-) button (count the number of pushes) until the maximum envelope is reduced to 1/2.
8) Confirm that the number of pushes are equal.

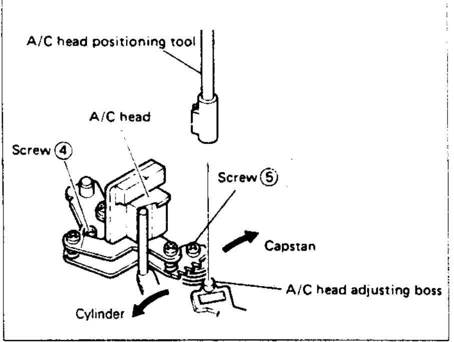


Fig. 2-5-2

2.5.3 Playback tracking

This is the most important adjustment. If incorrect, proper tracking will not be obtained in recording and playback.
Other problems that may occur are noise in parts of the picture, poor color reproduction and picture instability.

1) Play back the stairstep portion of the alignment tape.
2) Connect the oscilloscope to TP506 (PB FM) on the PRE/REC AMP board. Use TP511 (DRUM FF) as a trigger. Confirm that the envelope appears, as in Fig. 2-5-4.
3) Operate the tracking adjustment (press the tracking buttons during playback) and set for maximum playback envelope waveform.
4) If adjustment is required, first slightly loosen the set screw located at the bottom of the guide rollers. Using the guide roller adjustment tool, adjust the supply and take-up guide rollers (refer to Fig. 2-5-3) to obtain the correct waveform. Refer to Fig. 2-5-5.

SECTION 3
ELECTRICAL ADJUSTMENT

3.1 DECK SECTION ADJUSTMENT

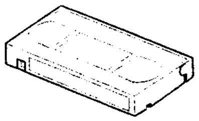
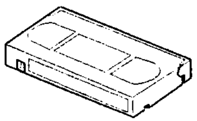
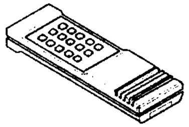
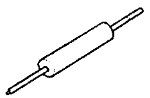
3.1.1 PRECAUTION

Electrical adjustments are required after replacing circuit components and certain mechanical parts.
It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipments is available.

1. Required test equipment

1. Colour television or monitor
2. Oscilloscope: wide-band, dual-trace, triggered delayed sweep
3. Frequency counter
4. Digital voltmeter
5. Signal generator: RF/IF sweep/maker
6. Signal generator: PAL colour bar, stairstep
7. Recording tape

2. Required adjustment tools

Alignment tape (SP) MH-2	Alignment tape (LP) MH-2L
	
Presetting unit PTU94008	Adjustment driver YTU93004-2
	
∗SMC replacement tools YTU94038C	

∗**Note:** *It is convenient for replacing chip parts.*

3. Colour bar signal, colour bar pattern and video sweep signal

- Colour bar signal of pattern generator

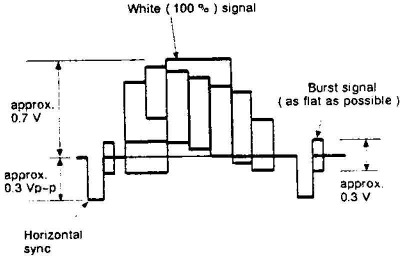


Fig. 3-1-1 Colour bar signal of pattern generator

- Colour bar signal

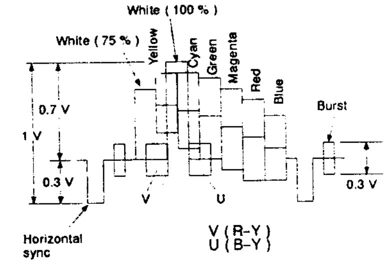


Fig. 3-1-2 Colour bar signal waveform

- Colour bar pattern

(75 %) →

White	Yellow	Cyan	Green	Magenta	Red	Blue
V	U	White 100%			Black	

Fig. 3-1-3 Colour bar pattern

- Video sweep signal

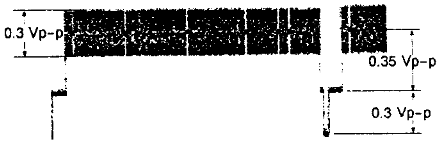


Fig. 3-1-4 Video sweep signal

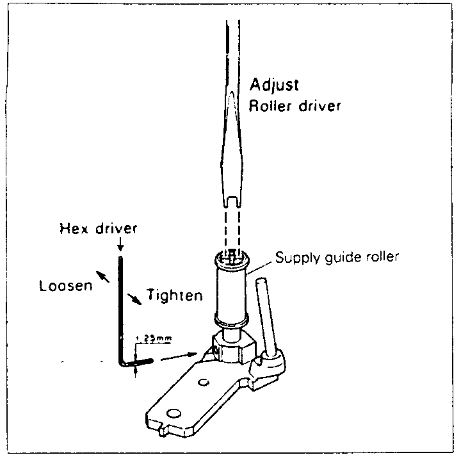

Adjust
Roller driver
Hex driver
Loosen
Tighten
2.5mm
Supply guide roller

Fig. 2-5-3

5) By pushing the tracking buttons several times, vary the FM waveform output from maximum to minimum (and vice versa) gradually, and confirm that the waveform remains flat as in Fig. 2-5-6.
6) If the FM waveform varies and is not mostly flat, adjust the height of guide roller(s) until the RF waveform is as flat as possible.
7) Eject a tape and then playback tape again, since the height of guide rollers may move during adjustment. Confirm, when pushing the tracking (+) and (-) buttons, FM waveform variation is always flat.
8) After adjustment, confirm that the tape wrinkling does not occur at the roller upper or lower limits, as in Fig. 2-5-7.
9) Perform step 2.5.1 and 2.5.2.

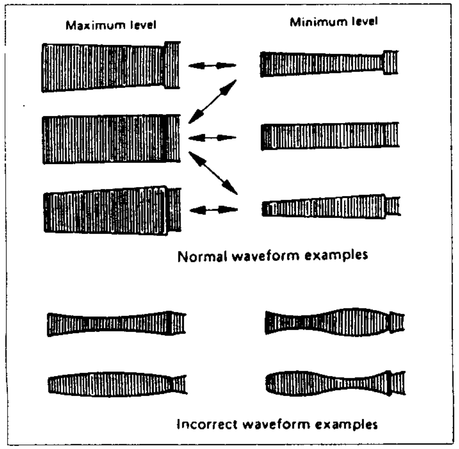

Maximum level
Minimum level
Normal waveform examples
Incorrect waveform examples

Fig. 2-5-4

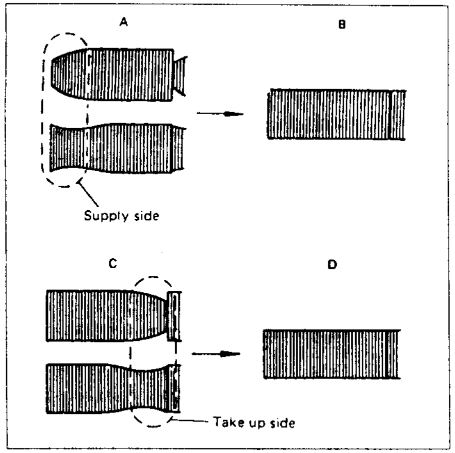

A
B
Supply side
C
D
Take up side

Fig. 2-5-5

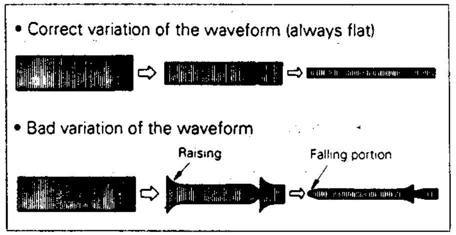

• Correct variation of the waveform (always flat)
• Bad variation of the waveform
Raising
Falling portion

Fig. 2-5-6

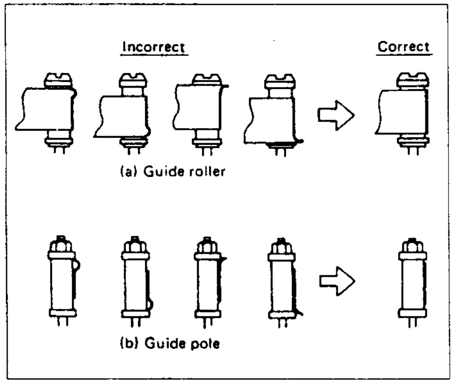

Incorrect
Correct
(a) Guide roller
(b) Guide pole

Fig. 2-5-7

3.1.2 SWITCHING REGULATOR CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. 5V DC output voltage

Signal	•TUNER
Mode	•SP •REC
Equipment	•Digital voltmeter
Measurement point	•Q802 Emitter (SWD 5 V) •Q803 Emitter (GND)
Adjustment part	•R805 (SW 5 V)
Specification	•5.2 ± 0.1 V DC

1) Connect a digital voltmeter to Q802 Emitter (SWD 5V) and Q803 Emitter (GND).
2) Adjust R805 for 5.2 ± 0.1 V DC.

3.1.3 SERVO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. PB switching point

Signal	•Alignment tape (MH-2) •Stairstep
Mode	•PB •Digital tracking OFF
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) [TERMINAL BOARD]
Trigger slope (-)	•TP511 (DRUM FF) [PRE/REC AMP BOARD]
Adjustment tool	•Presetting unit [PTU94008]
Specification	•6.5 ± 0.5 H

Note: *Use only buttons "E" and "F". Depressing other buttons during adjustment may cause adjustment errors.*

1) Connect an oscilloscope to JA701 pin 19 and external trigger from TP511 (negative slope).
2) Playback the stairstep signal of the alignment tape.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (-) buttons.
4) Adjust by pressing "E" (+) or "F" (-) buttons of the presetting unit for position the trigger point 6.5 ± 0.5 H from V.sync.

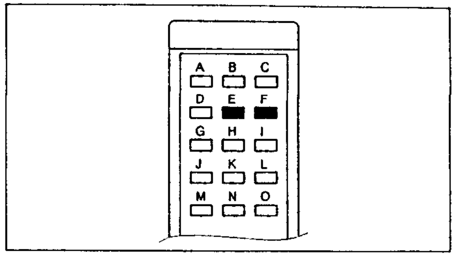

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O

Fig. 3-1-5 Presetting unit

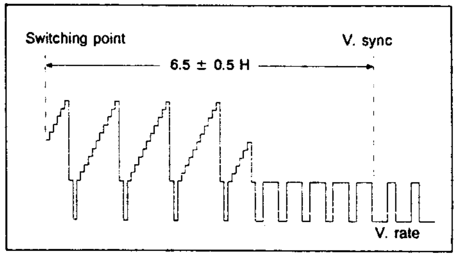


Fig. 3-1-6 PB switching point

2. Slow tracking preset

Signal	•Colour bar
Mode	•SP •REC → PB (SLOW) •Digital tracking OFF
Equipment	•TV-Monitor
Adjustment tool	•Presetting unit [PTU94008]
Specification	•Mimimum noise

Note: *Set VCR to the mode A by remote controller.*

1) Record a colour bar signal in the SP mode.
2) Playback recorded signal on the FWD slow mode.
3) Set the tracking control to the centre position by simultaneously pressing the (+) and (-) buttons.
4) Observe the display on a TV monitor and adjust for optimum noise condition (best tracking) by depressing "C" (+) or "B" (-) buttons of the presetting unit as required.
5) Depress the STOP button.
6) Confirm that the bar noise is not visible on the monitor in the slow mode.

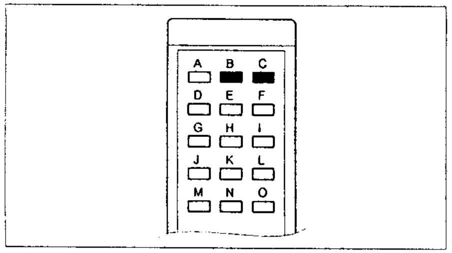


Fig. 3-1-7 Presetting unit

3.1.4 VIDEO CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the VIDEO UNIT BOARD.*

Important:

Item 1. thru 6..

1) Ordinarily performing these adjustments is not required. Adjustments should be performed only if IC2 on the VIDEO UNIT BOARD has been replaced.
2) To adjust, replace fixed resistor with variable chip resistor, then adjust as required.

1. EE Y level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) [TERMINAL BOARD]
Adjustment part	•R42 (EE Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

1) Connect an oscilloscope to JA701 pin 19.
2) Confirm that Y level is 2.00 ± 0.06 Vp-p. Unterminated.
3) If necessary, replace R42 with the variable chip resistor NVP1301-153N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-8.

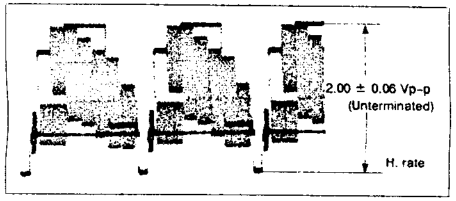


Fig. 3-1-8 EE Y level

2. White clip

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 22
Adjustment part	•R45 (W/D CLIP)
Specification	•WHITE CLIP : 190 ± 4 % •DARK CLIP : 145 ± 8 %

1) Connect an oscilloscope to IC2 pin 22.
2) Confirm that white clip is 190 ± 4 % and dark clip is 145 ± 8 %.
3) If necessary, replace R45 with the variable chip resistor NVP1301-103N and adjust it 190 ± 4 % white clip and 145 ± 8 % dark clip, as in Fig. 3-1-9.

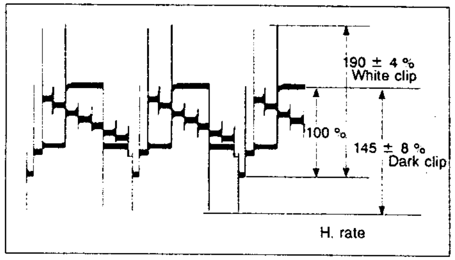


Fig. 3-1-9 White clip

3. Carrier & deviation

• Carrier

Signal	•No signal-VIDEO INPUT (Shorted RCA Phono Plug)
Mode	•EE
Equipment	•Frequency counter
Measurement point	•CN2 pin 5
Adjustment part	•R28 (CARRIER)
Specification	•3.80 MHz ± 40 kHz

1) Connect the frequency counter to CN2 pin 5.
2) Confirm that frequency is 3.80 MHz ± 40 kHz.
3) If necessary, replace R28 with the variable chip resistor NVP1301-223N and adjust it for 3.80 MHz ± 40 kHz.

• Deviation

Signal	•Colour bar
Mode	•REC then PB
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) [TERMINAL BOARD]
Adjustment part	•R29 (DEVIATION)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

4) Record and playback a colour bar signal.
5) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
6) If necessary, replace R29 with the variable chip resistor NVP1301-103N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-10.

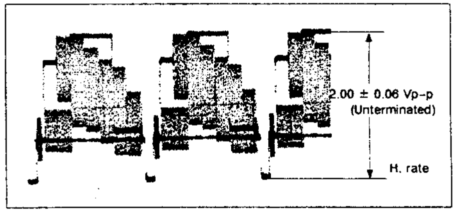


Fig. 3-1-10 Carrier & deviation

4. YNR level

Signal	•Colour bar
Mode	•EE
Equipment	•Oscilloscope
Measurement point	•IC2 pin 9
Adjustment part	•R18 (N.C. BALANCE)
Specification	•Mimimum DC step difference

1) Connect an oscilloscope to IC2 pin 9.
2) Confirm that DC step difference is minimum.
3) If necessary, replace R18 with the variable chip resistor NVP1301-152N and adjust it for minimum DC step difference, as in Fig. 3-1-11.

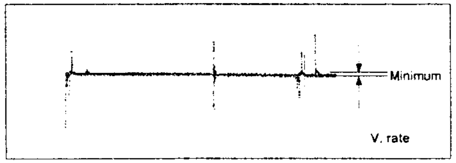


Fig. 3-1-11 YNR level

5. PB Y level

Signal	•Colour bar
Mode	•SP •REC then PB
Equipment	•Oscilloscope
Measurement point	•JA701 pin 19 (VIDEO OUT) [TERMINAL BOARD]
Adjustment part	•R25 (PB Y LEVEL)
Specification	•2.00 ± 0.06 Vp-p (Unterminated)

Note: *Confirm that procedure 3.1.4-2. is correct before performing this adjustment procedure.*

1) Connect an oscilloscope to JA701 pin 19.
2) Record and playbck a colour bar signal.
3) Confirm that Y level is 2.00 ± 0.06 Vp-p unterminated.
4) If necessary, replace R25 with the variable chip resistor NVP1301-472N and adjust it for 2.00 ± 0.06 Vp-p, as in Fig. 3-1-12.

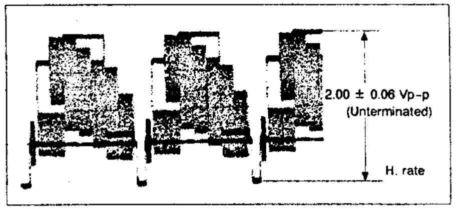


Fig. 3-1-12 PB Y level

6. REC colour level

Signal	•Colour bar
Mode	•SP •REC
Equipment	•Oscilloscope
Measurement point	•CN2 pin 11 (REC COLOUR)
Adjustment part	•R52 (REC COLOUR LEVEL)
Specification	•200 ± 10 mVp-p

1) Connect an oscilloscope to CN2 pin 11.
2) Record the colour bar signal in SP mode.
3) Confirm that colour level is 200 ± 10 mV p-p, as in Fig. 3-1-13.
4) If necessary, replace R52 with the variable chip resistor NVP1301-222N and adjust it for 200 ± 10 mVp-p.

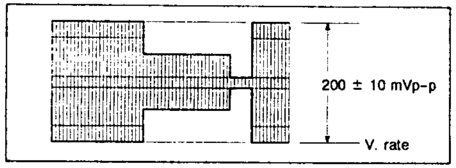


Fig. 3-1-13 REC colour level

3.1.5 TIMER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the MAIN BOARD.*

1. Timer clock

Signal	·No signal
Mode	·EE ·AUX
Equipment	·Frequency counter
Measurement point	·IC601 pin 64
Adjustment part	·C614 (TIMER CLOCK)
Specification	·1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec)

1) Connect the frequency counter to IC601 pin 64 and GND.
2) Connect a short wire between IC601 pin 33 and IC601 pin 63.
3) Short the leads of capacitor C616 once in order to reset IC601.
4) Adjust C614 for 1024.008 ± 0.001 Hz (976.5549 ± 0.0010 μsec).
5) Disconnect the short wire.

3.1.6 TUNER CIRCUIT

Note: *Unless otherwise specified, all measurement points and adjustment parts are located on the IF UNIT BOARD.*

1. RF AGC

Note: *Before the following adjustment,*

1) Connect a cable to ANT IN and terminate TV OUT with 75 ohms.

2) Set a TV channel signal generator as follows.

Video: 65 dBμ 75 Ω, colour bar 87.5 % modulation.

Audio: 55 dBμ 75 Ω, 1 kHz ± 50 kHz deviation.

⟨Factory Method⟩

Signal	·TV broadcasting
Mode	·Tuner
Equipment	·Oscilloscope ·TV signal generator
Measurement point	·IF UNIT
Adjustment part	·IF VR
Specification	·-6.0 dB from maximum level (with minimum noise)

1) Connect an oscilloscope to IF terminal of U/V tuner (front end).
2) Adjust IF VR for maximum level, then adjust IF VR to reduce the IF level -6.0 dB from maximum level.

⟨Alternate Method⟩

Note: *Adjust IF VR (RF AGC) to correct for excess noise in the picture or when streaks cross interference occurs due to strong electrical fields.*

1) Adjust IF VR to minimize noise or streaks on the TV screen.
2) Adjust for noisy picture with strong signal. Then adjust until noise just disappears. Select other channels to confirm proper pick-up of channels.

SECTION 4
CHARTS AND DIAGRAMS

SCHEMATIC DIAGRAM NOTES

Safety precautions
The Components identified by the symbol ⚠ are critical for safety. For continued safety, replace safety critical components only with manufactures recommended parts.

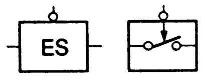
1. Schematic diagram values

Unless otherwise specified.

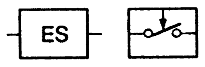
1) All resistance values are in ohms. 1/6 W, 1/8 W (refer to parts list).
   Chip resistors are 1/16 W.
   K: KΩ (1000Ω), M: MΩ (1000KΩ)
2) All capacitance values are in μF, (P: PF).
3) All inductance values in μH, (m: mH).
4) All diodes are 1SS133 or MA165, (refer to parts list).

2. Indications

AUX : Active only at high.
$\overline{\text{AUX}}$: Active only at low.

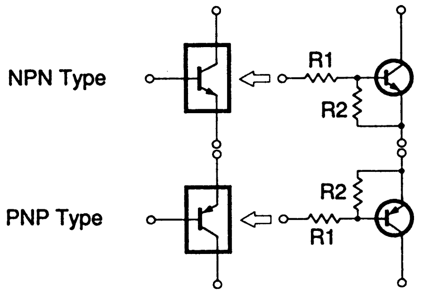


Active only at low for electronic switch.

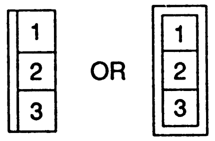


Active only at high for electronic switch.

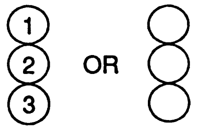
Digital transistor :
The digital transistor includes built in resistors.
It features small size and high reliability.


NPN Type
R1
R2
PNP Type
R2
R1

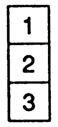
3. Interpreting Connector indications



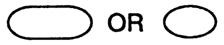
Removable connector



Direct connection on board



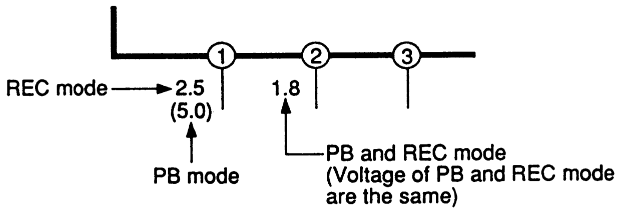
Non-removable Board connector



Connected pattern on board

4. Voltage measurement

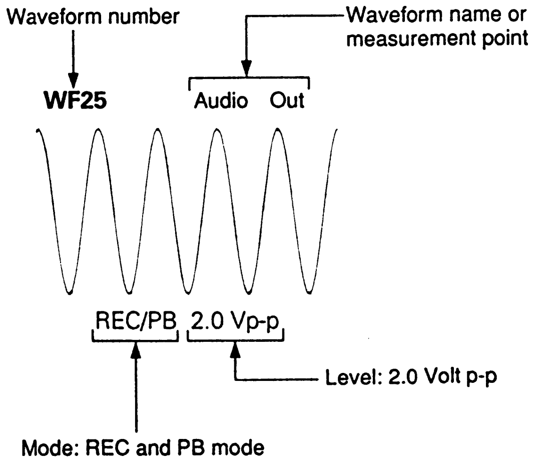
1) Voltage chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
   — : Unmeasurable or unnecessary to measure.
2) Audio section
   REC : 1KHz, −8 dBs sine wave signal in SP mode, Normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured using a correctly illuminated grey scale test chart in the E-E mode.
4) Schematic diagram
   Voltage Indications for REC and PB mode on Schematic are as shown below.


①
②
③
REC mode
2.5
(5.0)
1.8
PB mode
PB and REC mode
(Voltage of PB and REC mode are the same)

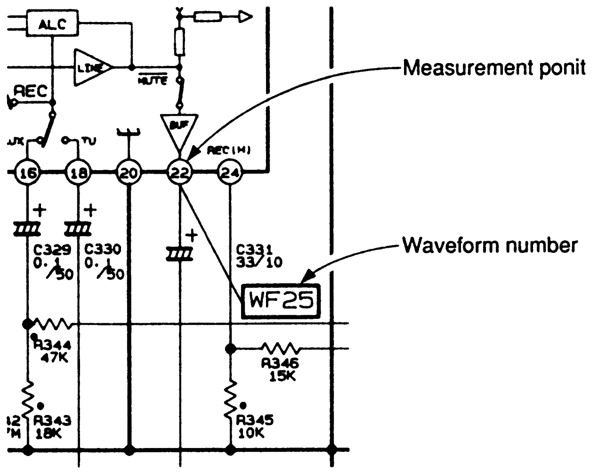
5. Waveform measurement

1) Waveform chart
   REC : Color bar signal in SP mode, normal VHS mode.
   PB : Alignment tape, color bar SP mode, normal VHS mode.
2) Audio Section
   REC : 1KHz, −8 dBs sine wave signal in SP mode, normal VHS mode.
   PB : REC then playback it.
3) Movie Camera Section
   Measured using a correctly illuminated grey scale test chart in the E-E mode.

Example:


Waveform number
Waveform name or measurement point
WF25
Audio Out
REC/PB 2.0 Vp-p
Level: 2.0 Volt p-p
Mode: REC and PB mode

4) Schematic diagram
   Waveform indications on schematic are as shown below.


ALC
REC
LINE
MUTE
BUF
REC(H)
16
18
20
22
24
C329 0.1/50
C330 0.1/50
C331 33/10
WF25
R344 47K
R343 18K
R346 15K
R345 10K
Measurement ponit
Waveform number

6. Signal path Symbols

The arrows indicate the signal path as follows.

⇨	Playback signal path
▭▶	Playback and recording signal path
➡	Recording signal path (including E-E signal path)
▬▷	Y signal path
▭▷▷	Color (Chroma) signal path
▭▶▷	R or R-Y signal path
▬▶▷	B or B-Y signal path
▭▷▶	Capstan servo path
▭▶▶	Drum servo path
▬▶▶	Reel servo path

CIRCUIT BOARD NOTES

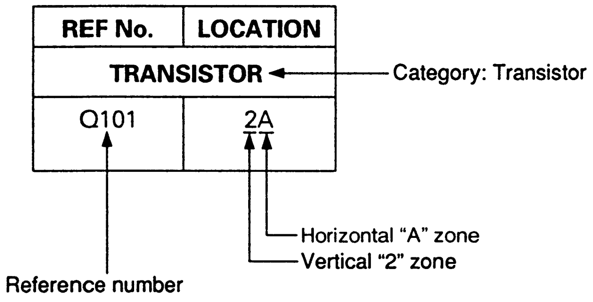
1. Color indications

1) Foil side :
   Foil side patterns are indicated at gray shading.
2) Component side :
   Component side patterns are indicated at RED shading.

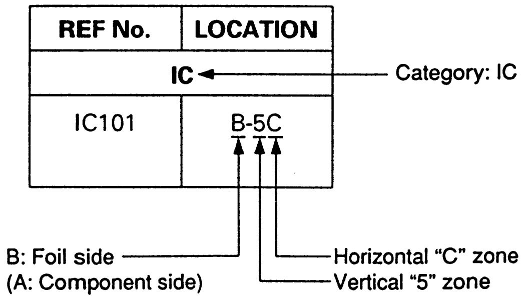
Notes:
Foil side (B side) ;
Parts on the foil side seen from foil face (pattern face) are indicated.
Component side (A side) ;
Parts on the component side seen from component face (parts face) are indicated.

2. Location of SMC indications

1) Single pattern :

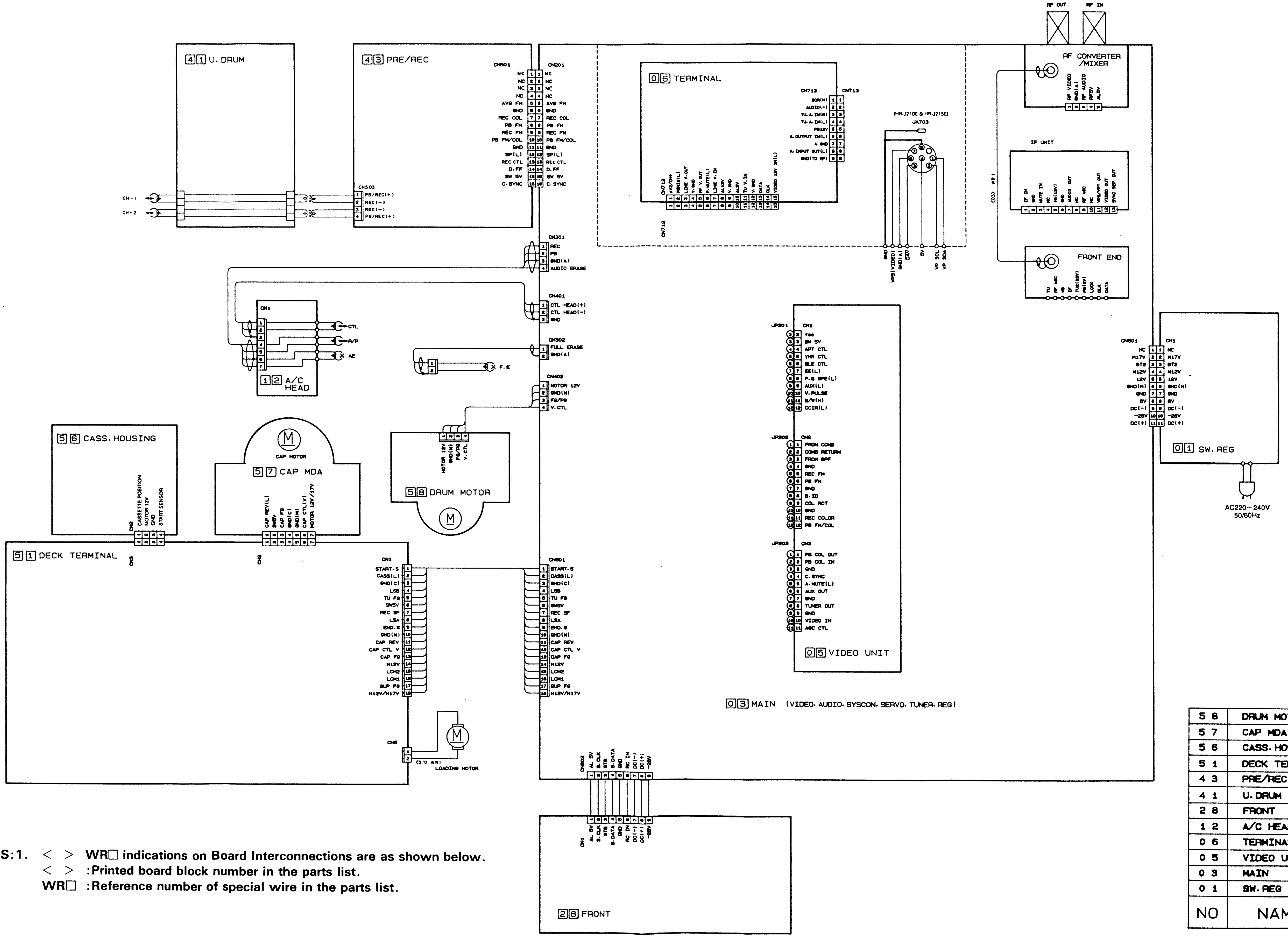

REF No.
LOCATION
TRANSISTOR
Category: Transistor
Q101
2A
Horizontal "A" zone
Vertical "2" zone
Reference number

2) Double pattern :


REF No.
LOCATION
IC
Category: IC
IC101
B-5C
B: Foil side
(A: Component side)
Horizontal "C" zone
Vertical "5" zone

Notes:
1) **For general information in service manual, please refer to the Service Manual of GENERAL INFORMATION No. 82054D (January 1994).**
2) **For repairing SMC (Surface Mounted Components), please refer to the VIDEO SERVICE GUIDE No. VTS81001.**

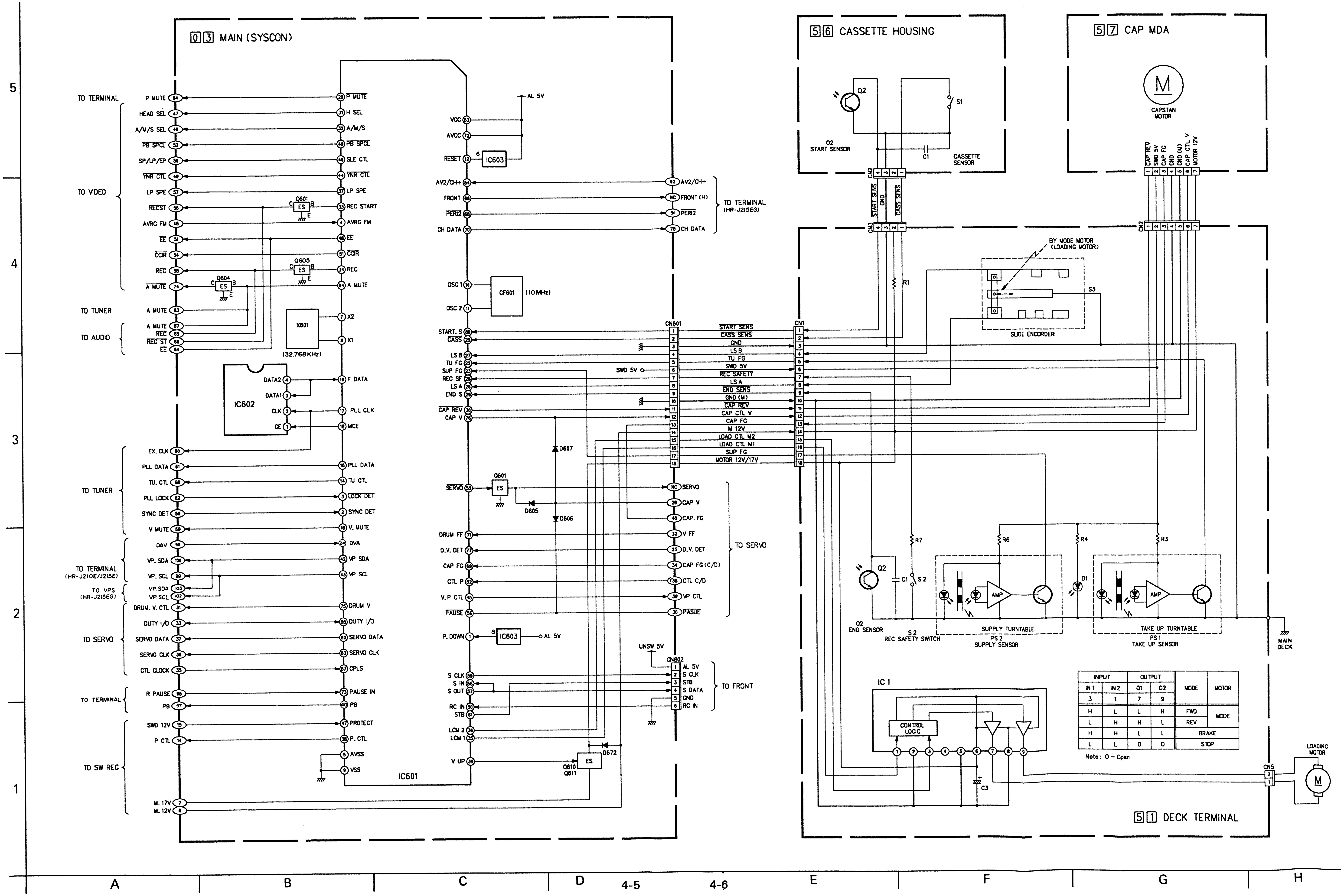
4.1 BOARD INTERCONNECTIONS


5
4
3
2
1
A
B
C
D
E
F
G
H
41 U. DRUM
CH-1
CH-2
43 PRE/REC
CN503
1 PB/REC(+)
2 REC(−)
3 REC(−)
4 PB/REC(+)
CN501
CN201
1 NC
2 NC
3 NC
4 NC
5 AVG FM
6 GND
7 REC COL
8 PB FM
9 REC FM
10 PB FM/COL
11 GND
12 SP(L)
13 REC CTL
14 D.FF
15 SW 5V
16 C.SYNC
CN301
1 REC
2 PB
3 GND(A)
4 AUDIO ERASE
CN401
1 CTL HEAD(+)
2 CTL HEAD(−)
3 GND
CN302
1 FULL ERASE
2 GND(A)
F.E
CN402
1 MOTOR 12V
2 GND(M)
3 FG/PG
4 V.CTL
CN1
CTL
R/P
AE
12 A/C HEAD
06 TERMINAL
CN713
CN713
1 SCR(H)
2 AUDIO(−)
3 TU.A.IN(R)
4 TU.A.IN(L)
5 PB12V
6 A.OUTPUT IN(L)
7 A.GND
8 A.INPUT OUT(L)
9 GND(TO RF)
CN712
1 AV2/CH+
2 PERI2(L)
3 LINE V.OUT
4 V.GND
5 RF V.OUT
6 P.MUTE(L)
7 LINE V.IN
8 AL12V
9 V.GND
10 AL5V
11 TU V.IN
12 V.GND
13 DATA
14 CLK
15 VIDEO 12V ON(L)
CN712
(HR-J210E & HR-J215E)
JA703
GND
VPS(VIDEO)
GND(A)
DAV
5V
VP SCL
VP SDA
RF OUT
RF IN
RF CONVERTER /MIXER
1 RF VIDEO
2 GND(A)
3 RF AUDIO
4 RF5V
5 AL5V
IF UNIT
1 IF IN
2 GND
3 MUTE IN
4 NC
5 +B(12V)
6 GND
7 AUDIO OUT
8 NC
9 RF AGC
10 NC
11 VPS/VPT OUT
12 VIDEO OUT
13 SYNC SEP OUT
〈03〉 WR1
FRONT END
TU
RF AGC
MB
IF
TU2(33V)
PB(5V)
LOCK
CLK
DATA
CN801
CN1
1 NC
2 M17V
3 BT2
4 M12V
5 12V
6 GND(M)
7 GND
8 6V
9 DC(−)
10 −28V
11 DC(+)
01 SW. REG
AC220~240V
50/60Hz
JP201
CN1
2 fsc
3 SW 5V
4 APT CTL
5 YNR CTL
6 SLE CTL
7 EE(L)
8 P.B SPE(L)
9 AUX(L)
10 V.PULSE
11 B/W(H)
12 CCIR(L)
JP202
CN2
1 FROM COMB
2 COMB RETURN
3 FROM BPF
4 GND
5 REC FM
6 PB FM
7 GND
8 B.ID
9 COL ROT
10 GND
11 REC COLOR
12 PB FM/COL
JP203
CN3
1 PB COL OUT
2 PB COL IN
3 GND
4 C.SYNC
5 A.MUTE(L)
6 AUX OUT
7 GND
8 TUNER OUT
9 GND
10 VIDEO IN
11 AGC CTL
05 VIDEO UNIT
56 CASS. HOUSING
CN2
1 CASSETTE POSITION
2 MOTOR 12V
3 GND
4 START SENSOR
CAP MOTOR
57 CAP MDA
1 CAP REV(L)
2 SW5V
3 CAP FG
4 GND(C)
5 GND(M)
6 CAP CTL(V)
7 MOTOR 12V/17V
58 DRUM MOTOR
1 MOTOR 12V
2 GND(M)
3 FG/PG
4 V.CTL
51 DECK TERMINAL
CN3
CN2
CN1
CN501
1 START.S
2 CASS(L)
3 GND(C)
4 LSB
5 TU FG
6 SW5V
7 REC SF
8 LSA
9 END.S
10 GND(M)
11 CAP REV
12 CAP CTL V
13 CAP FG
14 M12V
15 LCM2
16 LCM1
17 SUP FG
18 M12V/M17V
CN5
〈51〉 WR1
LOADING MOTOR
03 MAIN (VIDEO. AUDIO. SYSCON. SERVO. TUNER. REG)
CN802
CN1
1 AL 5V
2 S.CLK
3 STB
4 S.DATA
5 GND
6 RC IN
7 DC(−)
8 DC(+)
9 −28V
28 FRONT

NOTES:1. < > WR☐ indications on Board Interconnections are as shown below.
< > :Printed board block number in the parts list.
WR☐ :Reference number of special wire in the parts list.

NO	NAME
5 8	DRUM MOTOR
5 7	CAP MDA
5 6	CASS. HOUSING
5 1	DECK TERMINAL
4 3	PRE/REC
4 1	U. DRUM
2 8	FRONT
1 2	A/C HEAD
0 6	TERMINAL
0 5	VIDEO UNIT
0 3	MAIN
0 1	SW. REG

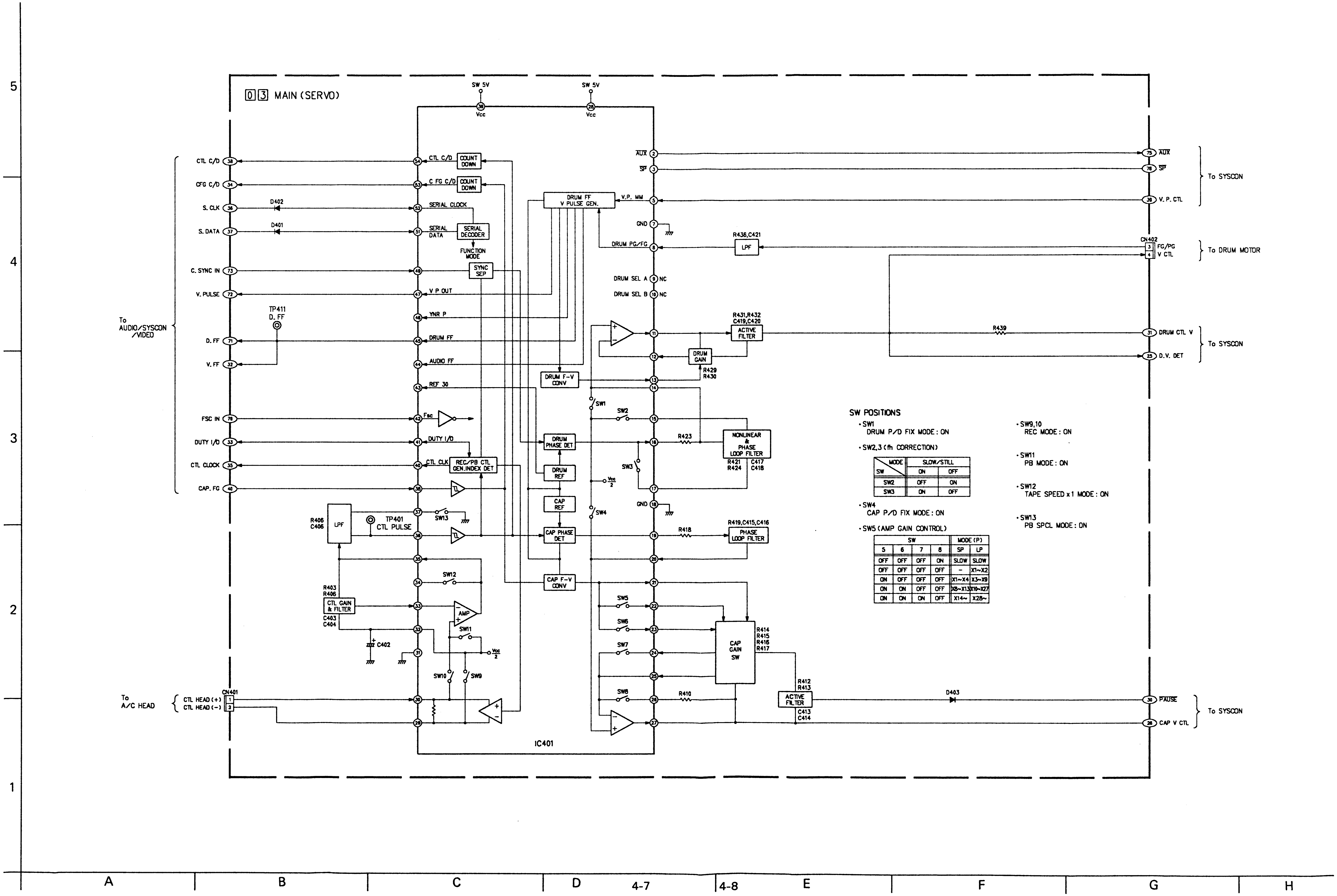
4.2 SYSCON BLOCK DIAGRAM


03 MAIN (SYSCON)
IC601
TO TERMINAL
P MUTE 84
HEAD SEL 47
A/M/S SEL 46
PB SPCL 52
SP/LP/EP 50
YNR CTL 49
TO VIDEO
LP SPE 57
RECST 56
AVRG FM 48
EE 51
CCIR 54
REC 55
A MUTE 74
TO TUNER
A MUTE 83
TO AUDIO
A MUTE 87
REC 85
REC ST 86
EE 84
Q601
Q605
Q604
ES
C B E
20 P MUTE
31 H SEL
32 A/M/S
49 PB SPCL
50 SLE CTL
44 YNR CTL
37 LP SPE
33 REC START
4 AVRG FM
48 EE
51 CCIR
34 REC
64 A MUTE
X601
(32.768KHz)
7 X2
8 X1
IC602
DATA2 4
DATA1 3
CLK 2
CE 1
19 F DATA
17 PLL CLK
18 MCE
EX. CLK 60
PLL DATA 61
TU. CTL 68
PLL LOCK 62
SYNC DET 58
V MUTE 89
15 PLL DATA
14 TU CTL
3 LOCK DET
2 SYNC DET
16 V. MUTE
TO TERMINAL (HR-J210E/J215E)
DAV 95
VP. SDA 100
VP. SCL 99
TO VPS (HR-J215EG)
VP SDA 103
VP.SCL 102
24 DVA
42 VP SDA
43 VP SCL
TO SERVO
DRUM. V. CTL 31
DUTY I/O 33
SERVO DATA 37
SERVO CLK 36
CTL CLOCK 35
75 DRUM V
65 DUTY I/O
80 SERVO DATA
82 SERVO CLK
67 CPLS
TO TERMINAL
R PAUSE 96
PB 97
73 PAUSE IN
40 PB
TO SW REG
SWD 12V 15
P CTL 14
47 PROTECT
38 P. CTL
5 AVSS
9 VSS
M. 17V 7
M. 12V 8
VCC 63
AVCC 72
AL 5V
6
RESET 12
IC603
AV2/CH+ 54
FRONT 66
PERI2 68
CH DATA 70
92 AV2/CH+
NC FRONT (H)
91 PERI2
78 CH DATA
TO TERMINAL (HR-J215EG)
OSC 1 10
OSC 2 11
CF601 (10MHz)
START. S 80
CASS 25
LS B 27
TU FG 22
SUP FG 23
REC SF 28
LS A 26
END S 29
CAP REV 30
CAP V 76
SWD 5V
CN601
D607
Q601
SERVO 56
ES
D605
D606
NC SERVO
26 CAP V
40 CAP. FG
32 V FF
25 D.V. DET
34 CAP FG (C/D)
38 CTL C/D
39 VP CTL
30 PASUE
TO SERVO
DRUM FF 71
D.V. DET 77
CAP FG 69
CTL P 52
V.P CTL 45
PAUSE 56
P. DOWN 1
8
IC603
AL 5V
UNSW 5V
CN802
1 AL 5V
2 S CLK
3 STB
4 S DATA
5 GND
6 RC IN
TO FRONT
S CLK 58
S IN 58
S OUT 57
RC IN 50
STB 61
LCM 2 36
LCM 1 35
V UP 39
ES
Q610
Q611
D672
START SENS
CASS SENS
GND
LS B
TU FG
SWD 5V
REC SAFETY
LS A
END SENS
GND (M)
CAP REV
CAP CTL V
CAP FG
M 12V
LOAD CTL M2
LOAD CTL M1
SUP FG
MOTOR 12V/17V
CN1
56 CASSETTE HOUSING
Q2
S1
Q2
START SENSOR
C1
CASSETTE SENSOR
CN2
START SENS
GND
CASS SENS
CN3
57 CAP MDA
M
CAPSTAN MOTOR
CAP REV
SWD 5V
CAP FG
GND
GND (M)
CAP CTL V
MOTOR 12V
CN2
R1
BY MODE MOTOR (LOADING MOTOR)
S3
SLIDE ENCORDER
R7
R6
R4
R3
Q2
C1
S2
D1
AMP
AMP
Q2
END SENSOR
S2
REC SAFETY SWITCH
SUPPLY TURNTABLE
PS2
SUPPLY SENSOR
TAKE UP TURNTABLE
PS1
TAKE UP SENSOR
MAIN DECK
IC1
CONTROL LOGIC
1 2 3 4 5 6 7 8 9
C3
CN5
LOADING MOTOR
M
51 DECK TERMINAL
5 4 3 2 1
A B C D E F G H

INPUT		OUTPUT		MODE	MOTOR
IN1	IN2	01	02		
3	1	7	9		
H	L	L	H	FWD	MODE
L	H	H	L	REV	
H	H	L	L	BRAKE	
L	L	0	0	STOP	

Note: 0 – Open

4.3 SERVO BLOCK DIAGRAM


03 MAIN (SERVO)
SW 5V
SW 5V
Vcc
Vcc
To AUDIO/SYSCON/VIDEO
CTL C/D 38
CFG C/D 34
S. CLK 36
S. DATA 37
C. SYNC IN 73
V. PULSE 72
TP411 D. FF
D. FF 71
V. FF 32
FSC IN 70
DUTY I/O 33
CTL CLOCK 35
CAP. FG 40
D402
D401
54 CTL C/D
53 C FG C/D
COUNT DOWN
COUNT DOWN
52 SERIAL CLOCK
51 SERIAL DATA
SERIAL DECODER
FUNCTION MODE
49
SYNC SEP
47 V P OUT
46 YNR P
45 DRUM FF
44 AUDIO FF
43 REF 30
42 Fsc
41 DUTY I/O
40 CTL CLK
REC/PB CTL GEN.INDEX DET
39
37
36
35
34
33
32
31
30
29
SW13
SW12
SW11
SW10
SW9
AMP
Vcc/2
R406 C406
LPF
TP401 CTL PULSE
R403 R406
CTL GAIN & FILTER
C403 C404
C402
To A/C HEAD
CTL HEAD (+)
CTL HEAD (−)
CN401
1
2
DRUM FF V PULSE GEN.
DRUM F-V CONV
DRUM PHASE DET
DRUM REF
CAP REF
CAP PHASE DET
CAP F-V CONV
IC401
AUX 2
SP 3
V.P. MM 5
GND 7
DRUM PG/FG 8
DRUM SEL A 9 NC
DRUM SEL B 10 NC
11
12
13
14
15
16
17
GND 18
19
20
21
22
23
24
25
26
27
SW1
SW2
SW3
SW4
SW5
SW6
SW7
SW8
Vcc/2
R436,C421
LPF
R431,R432 C419,C420
ACTIVE FILTER
DRUM GAIN
R429 R430
R423
NONLINEAR & PHASE LOOP FILTER
R421 R424
C417 C418
R418
R419,C415,C416
PHASE LOOP FILTER
CAP GAIN SW
R414 R415 R416 R417
R410
R412 R413
ACTIVE FILTER
C413 C414
D403
R439
75 AUX
76 SP
39 V. P. CTL
To SYSCON
CN402
3 FG/PG
4 V CTL
To DRUM MOTOR
31 DRUM CTL V
25 D.V. DET
To SYSCON
30 PAUSE
26 CAP V CTL
To SYSCON
5
4
3
2
1
A
B
C
D
E
F
G
H

SW POSITIONS

- SW1
  DRUM P/D FIX MODE : ON
- SW2,3 (fh CORRECTION)

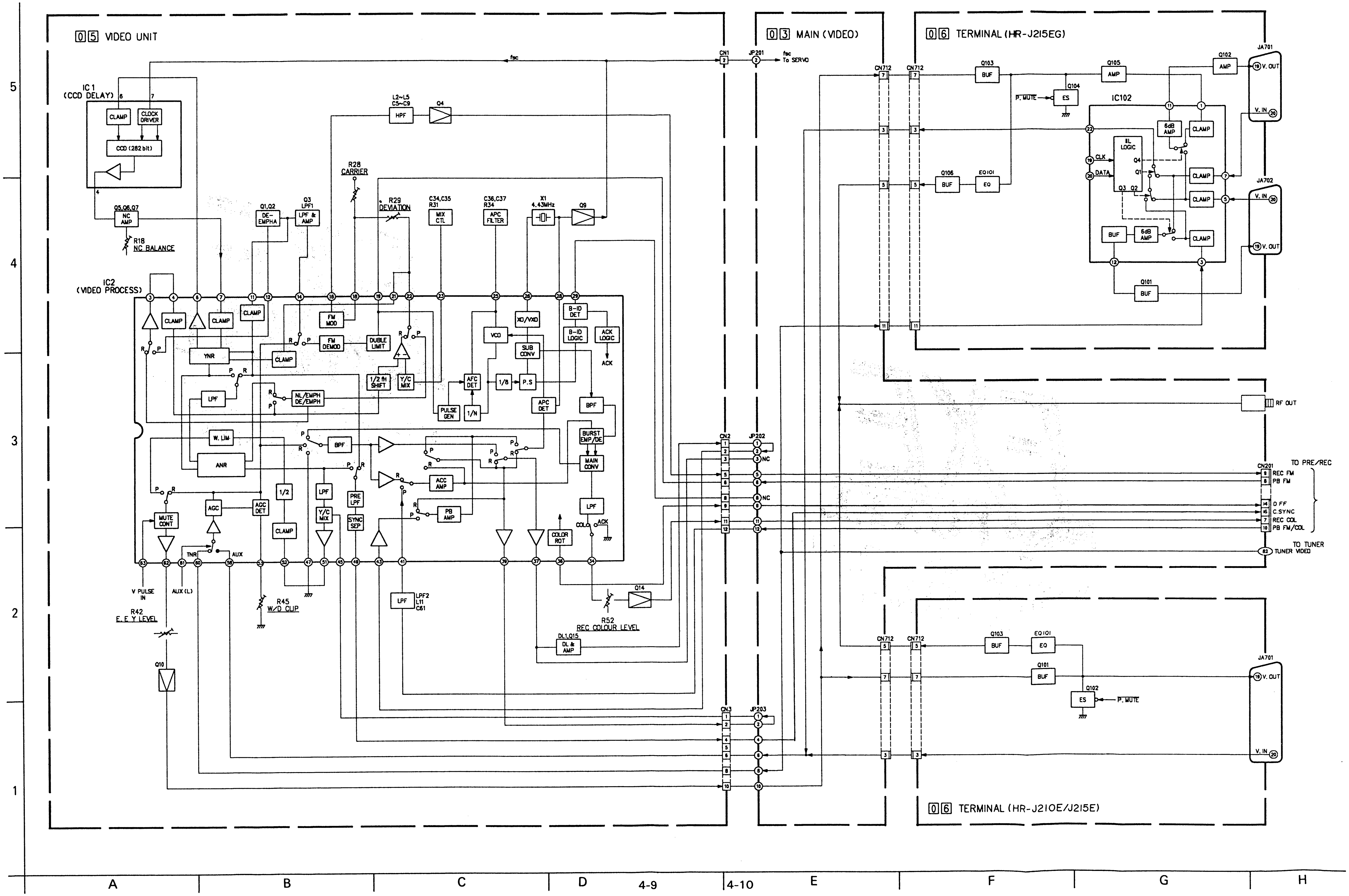
MODE / SW	SLOW/STILL ON	SLOW/STILL OFF
SW2	OFF	ON
SW3	ON	OFF

- SW4
  CAP P/D FIX MODE : ON
- SW5 (AMP GAIN CONTROL)

SW 5	SW 6	SW 7	SW 8	MODE (P) SP	MODE (P) LP
OFF	OFF	OFF	ON	SLOW	SLOW
OFF	OFF	OFF	OFF	–	X1~X2
ON	OFF	OFF	OFF	X1~X4	X3~X9
ON	ON	OFF	OFF	X8~X13	X10~X27
ON	ON	ON	OFF	X14~	X28~

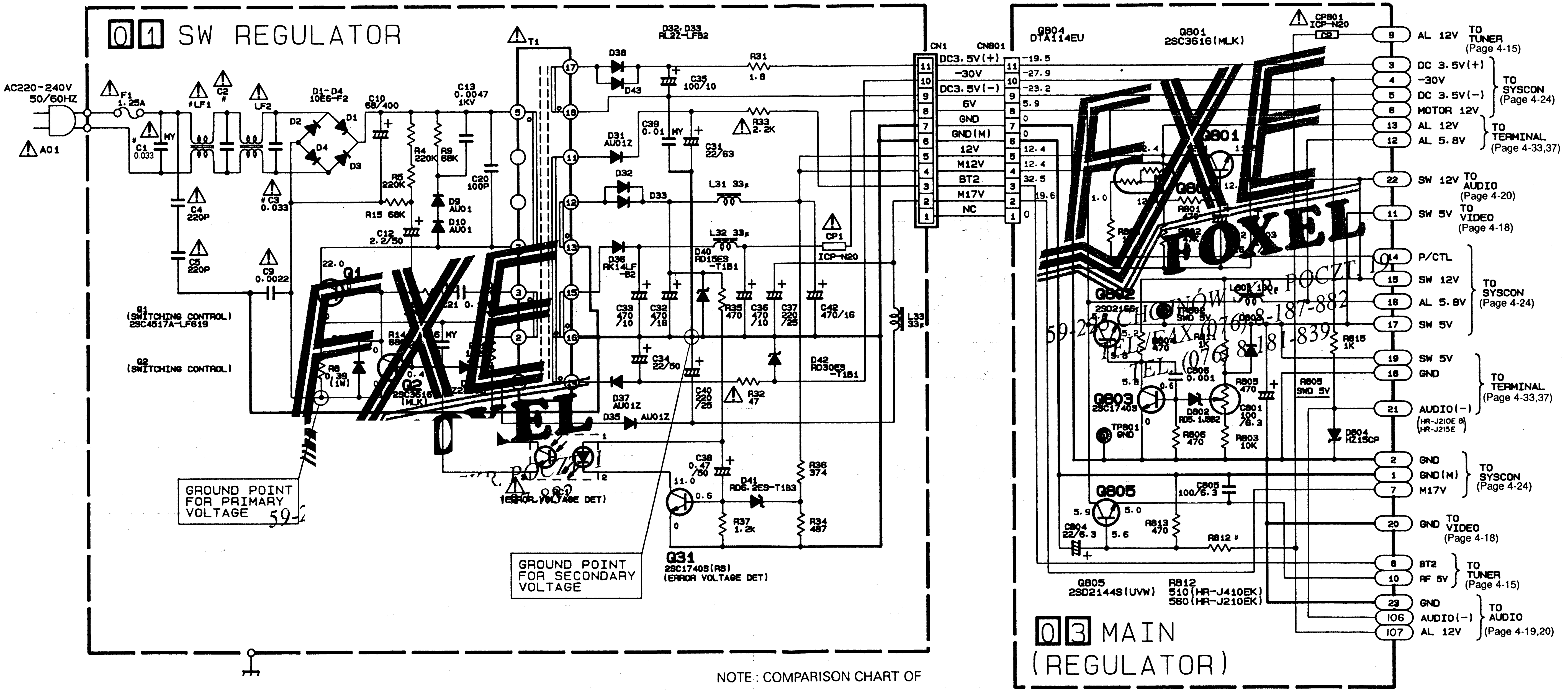
- SW9,10
  REC MODE : ON
- SW11
  PB MODE : ON
- SW12
  TAPE SPEED x 1 MODE : ON
- SW13
  PB SPCL MODE : ON

4.4 VIDEO BLOCK DIAGRAM



05 VIDEO UNIT
IC1 (CCD DELAY)
CLAMP
CLOCK DRIVER
CCD (282 bit)
Q5,Q6,Q7 NC AMP
R18 NC BALANCE
IC2 (VIDEO PROCESS)
Q1,Q2 DE-EMPHA
Q3 LPF1 LPF & AMP
L2~L5 C5~C9 HPF
Q4
R28 CARRIER
R29 DEVIATION
C34,C35 R31 MIX CTL
C36,C37 R34 APC FILTER
X1 4.43MHz
Q9
fsc
YNR
LPF
W. LIM
ANR
FM MOD
FM DEMOD
DUBLE LIMIT
1/2 fH SHIFT
Y/C MIX
NL/EMPH DE/EMPH
BPF
ACC AMP
PB AMP
VCO
XO/VXO
SUB CONV
AFC DET
1/8
P.S
PULSE GEN
1/N
APC DET
B-ID DET
B-ID LOGIC
ACK LOGIC
ACK
BURST EMP/DE
MAIN CONV
COLOR ROT
MUTE CONT
AGC
AGC DET
1/2
PRE LPF
SYNC SEP
TNR
AUX
V PULSE IN
AUX (L)
R42 E.E Y LEVEL
Q10
R45 W/D CLIP
LPF LPF2 L11 C61
Q14
R52 REC COLOUR LEVEL
DL1,Q15 DL & AMP
CN1
CN2
CN3
03 MAIN (VIDEO)
JP201
fsc To SERVO
JP202
JP203
NC
RF OUT
CN201
TO PRE/REC
REC FM
PB FM
D FF
C.SYNC
REC COL
PB FM/COL
TO TUNER
TUNER VIDEO
06 TERMINAL (HR-J215EG)
CN712
Q103 BUF
Q104 ES
P. MUTE
Q105 AMP
Q102 AMP
IC102
6dB AMP
IIL LOGIC
CLK
DATA
Q106 BUF
EQ101 EQ
Q101 BUF
JA701
V. OUT
V. IN
JA702
06 TERMINAL (HR-J210E/J215E)
Q102 ES
A
B
C
D
E
F
G
H
1
2
3
4
5

4.5 SWITCH REGULATOR AND REGULATOR SCHEMATIC DIAGRAMS

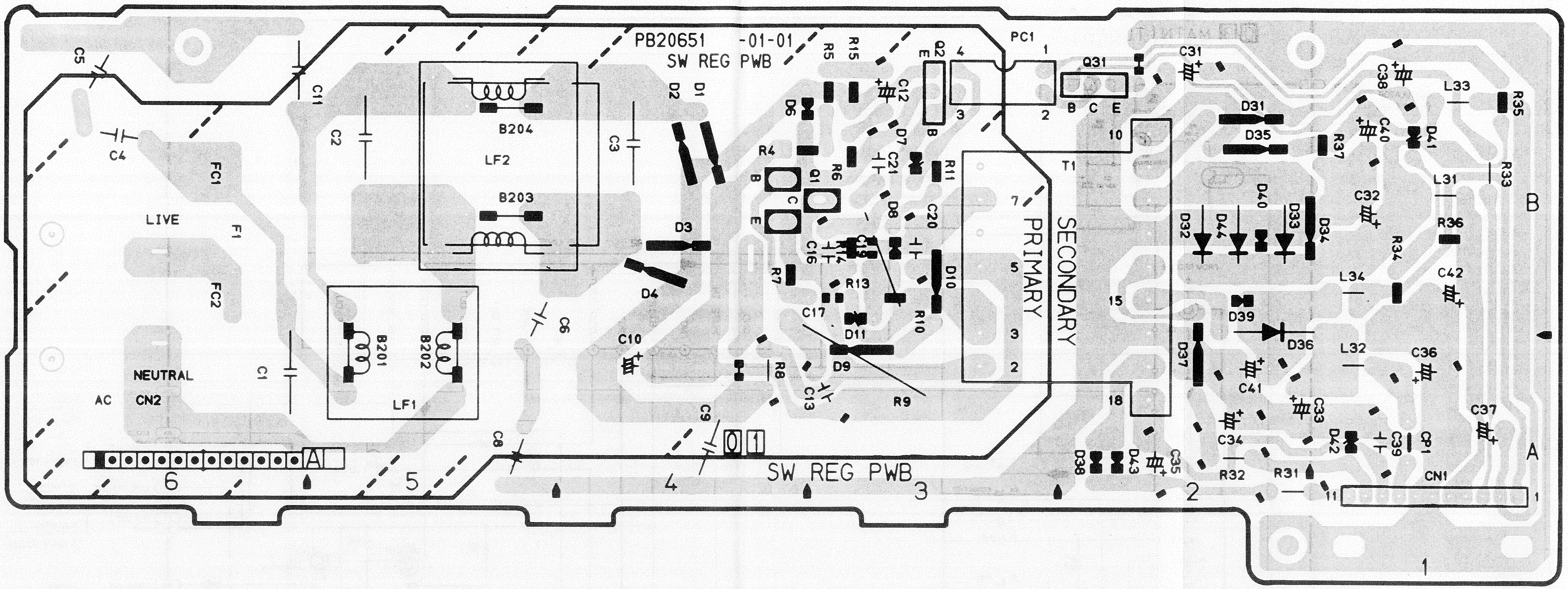


01 SW REGULATOR
AC220-240V 50/60HZ
A01
F1 1.25A
LF1
C2
LF2
D1-D4 10E6-F2
C10 68/400
C13 0.0047 1KV
T1
C1 0.033
C4 220P
C5 220P
C3 0.033
C9 0.0022
R4 220K
R9 68K
R5 220K
R15 68K
C12 2.2/50
D9 AU01
D10 AU01
C20 100P
Q1 (SWITCHING CONTROL) 2SC4517A-LF619
Q2 (SWITCHING CONTROL)
Q2 2SC3616 (MLK)
R8 0.39 (1W)
R14
GROUND POINT FOR PRIMARY VOLTAGE
D32, D33 RL2Z-LFB2
D38
D43
C35 100/10
R31 1.8
R33 2.2K
C39 0.01
C31 22/63
D31 AU01Z
D32
D33
L31 33μ
L32 33μ
D40 RD15ES -T1B1
D36 RK14LF -B2
C33 470 /10
C32 470 /16
R35 470
C36 470 /10
C37 220 /25
C42 470/16
CP1 ICP-N20
L33 33μ
C34 22/50
C40 220 /25
R32 47
D42 RD30ES -T1B1
D37 AU01Z
D35 AU01Z
(ERROR VOLTAGE DET)
C38 0.47 /50
D41 RD6.2ES-T1B3
R36 374
R37 1.2K
R34 487
Q31 2SC1740S(RS) (ERROR VOLTAGE DET)
GROUND POINT FOR SECONDARY VOLTAGE
CN1
CN801
DC3.5V(+)
-30V
DC3.5V(-)
6V
GND
GND(M)
12V
M12V
BT2
M17V
NC
Q804 DTA114EU
Q801 2SC3616(MLK)
CP801 ICP-N20
Q802 2SD2166
Q803 2SC1740S
D802 RD5.1JSB2
TP801 GND
R806 470
R803 10K
C801 100 /6.3
R805 SWD 5V
D804 HZ15CP
R815 1K
Q805
C805 100/6.3
C804 22/6.3
R813 470
R812 #
Q805 2SD2144S(UVW)
R812 510 (HR-J410EK) 560 (HR-J210EK)
03 MAIN (REGULATOR)
AL 12V TO TUNER (Page 4-15)
DC 3.5V(+)
-30V
DC 3.5V(-)
MOTOR 12V
TO SYSCON (Page 4-24)
AL 12V
AL 5.8V
TO TERMINAL (Page 4-33,37)
SW 12V TO AUDIO (Page 4-20)
SW 5V TO VIDEO (Page 4-18)
P/CTL
SW 12V
AL 5.8V
SW 5V
TO SYSCON (Page 4-24)
SW 5V
GND
AUDIO(-) (HR-J210E & HR-J215E)
TO TERMINAL (Page 4-33,37)
GND
GND(M)
M17V
TO SYSCON (Page 4-24)
GND TO VIDEO (Page 4-18)
BT2
RF 5V
TO TUNER (Page 4-15)
GND
AUDIO(-)
AL 12V
TO AUDIO (Page 4-19,20)

NOTE : COMPARISON CHART OF MODELS & MARKS (#)

REF.NO.	MODELS	
	HR-J210E/J215E	HR-J215EG
C1	OPEN	USED
C2	0.068	0.033
C3	USED	OPEN
LF1	SHORT	USED
R812	510	560

4.6 SWITCHING REGULATOR CIRCUIT BOARD


PB20651 -01-01
SW REG PWB
C5
C11
C4
FC1
LIVE
F1
FC2
NEUTRAL
AC
CN2
C1
C2
B204
LF2
B203
B201
B202
LF1
C3
C6
C8
C9
D2
D1
D3
D4
C10
R5
R15
Q2
E
B
C12
D6
R4
Q1
C
R6
D7
C21
R11
D8
C20
C16
C19
R14
R7
R13
D10
C17
D11
R10
D9
R8
C13
R9
PC1
1
2
3
4
Q31
B C E
C31
T1
PRIMARY
SECONDARY
10
7
5
3
2
15
18
D31
D35
D32
D44
D40
D33
D34
D39
D36
D37
C41
C33
C34
D38
D43
C35
R32
R31
D42
C39
CP1
CN1
11
C38
C40
D41
R37
L33
R35
L31
R33
C32
R36
R34
L34
C42
L32
C36
C37
A
B
6
5
4
3
2
1
SW REG PWB

MAIN CONPONENT PARTS LOCATION GUIDE
<SW REG PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	3B
Q2	3B
Q31	2B

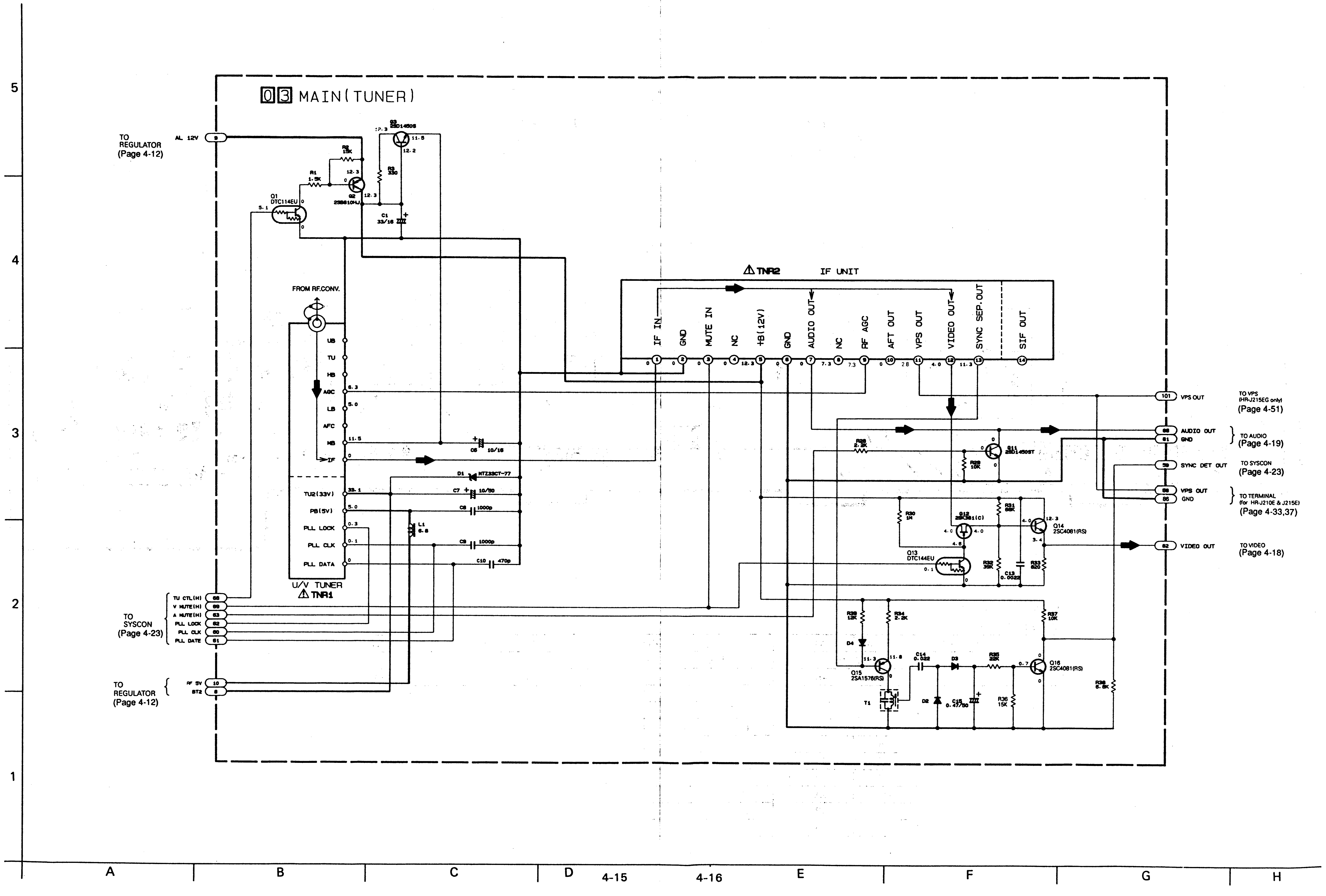
REF. No.	LOCATION
DIODE	
D1	4B
D2	4B
D3	4B
D4	4B
D6	4B
D7	3B
D8	3B
D9	3A
D10	3B
D31	2B

REF. No.	LOCATION
DIODE	
D32	2B
D33	2B
D35	2B
D36	2B
D37	2A
D38	2A
D40	2B
D41	1B
D42	1A
D43	2A

REF. No.	LOCATION
CONNECTOR	
CN1	1A

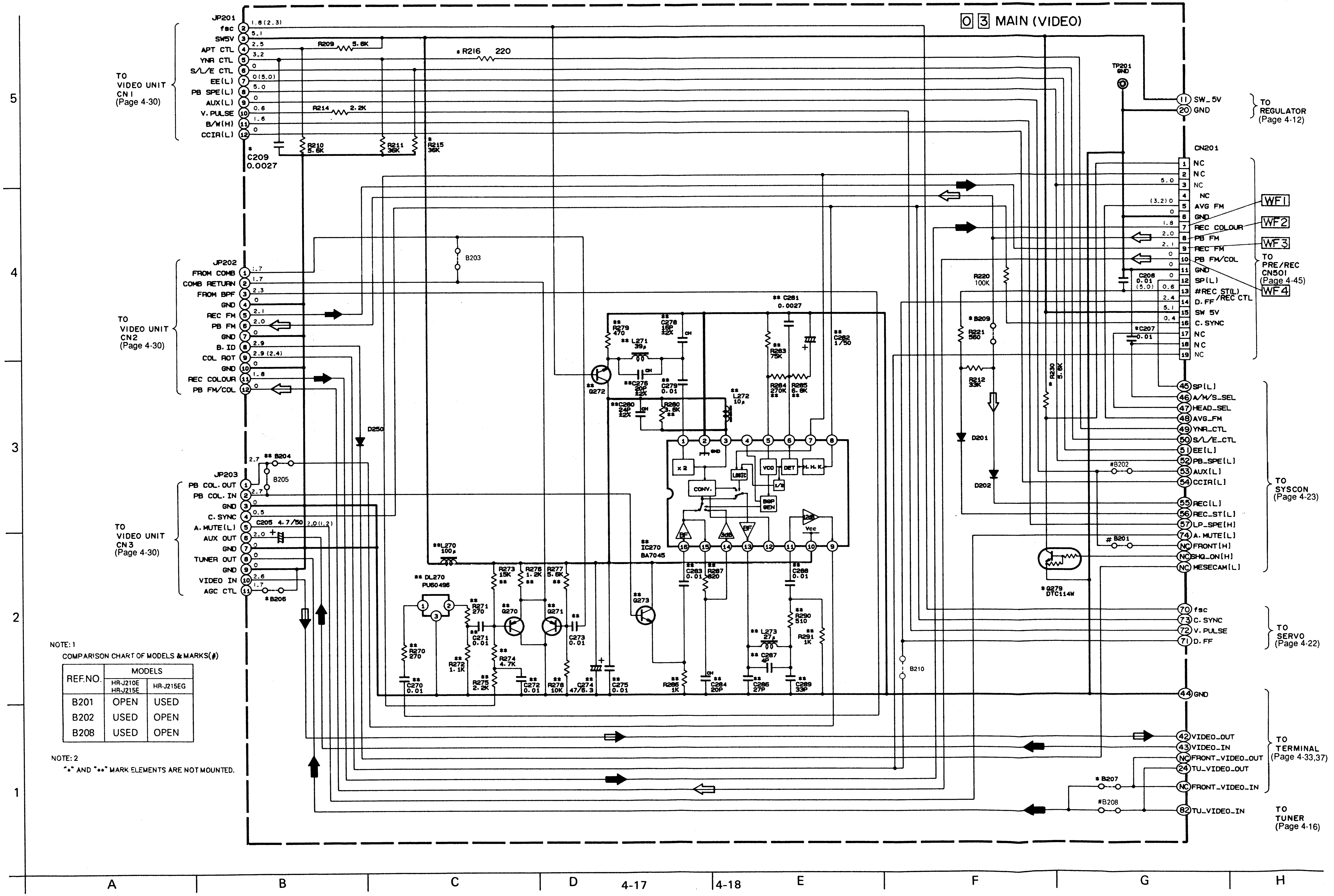
REF. No.	LOCATION
CP	
CP1	1A

4.7 TUNER SCHEMATIC DIAGRAM



03 MAIN(TUNER)
TO REGULATOR (Page 4-12)
AL 12V 9
Q1 DTC114EU
Q2 2SB810HJ
Q3 2SD1450S
R1 1.5K
R2 15K
R3 330
C1 33/16
FROM RF.CONV.
UB
TU
HB
AGC
LB
AFC
MB
IF
TU2(33V)
PB(5V)
PLL LOCK
PLL CLK
PLL DATA
U/V TUNER
⚠ TNR1
C6 10/16
D1 MTZ33CT-77
C7 10/50
C8 1000p
C9 1000p
C10 470p
L1 6.8
⚠ TNR2 IF UNIT
① IF IN
② GND
③ MUTE IN
④ NC
⑤ +B(12V)
⑥ GND
⑦ AUDIO OUT
⑧ NC
⑨ RF AGC
⑩ AFT OUT
⑪ VPS OUT
⑫ VIDEO OUT
⑬ SYNC SEP.OUT
⑭ SIF OUT
R28 2.2K
R29 10K
Q11 2SD1450ST
R30 1M
R31 68K
Q12 2SK381(C)
Q13 DTC144EU
Q14 2SC4081(RS)
R32 39K
C13 0.0022
R33 820
R39 12K
R34 2.2K
R37 10K
D4
Q15 2SA1576(RS)
C14 0.022
D3
R35 22K
Q16 2SC4081(RS)
T1
D2
C15 0.47/50
R36 15K
R38 6.8K
TO SYSCON (Page 4-23)
TU CTL(H) 68
V MUTE(H) 69
A MUTE(H) 63
PLL LOCK 62
PLL CLK 60
PLL DATE 61
TO REGULATOR (Page 4-12)
RF 5V 10
BT2 8
101 VPS OUT
TO VPS (HR-J215EG only) (Page 4-51)
AUDIO OUT
GND 81
TO AUDIO (Page 4-19)
SYNC DET OUT
TO SYSCON (Page 4-23)
VPS OUT
GND 86
TO TERMINAL (for HR-J210E & J215E) (Page 4-33,37)
82 VIDEO OUT
TO VIDEO (Page 4-18)
5
4
3
2
1
A
B
C
D
E
F
G
H

4.8 VIDEO SCHEMATIC DIAGRAM



03 MAIN (VIDEO)
JP201
fsc
SW5V
APT CTL
YNR CTL
S/L/E CTL
EE(L)
PB SPE(L)
AUX(L)
V. PULSE
B/W(H)
CCIR(L)
TO VIDEO UNIT CN1 (Page 4-30)
R209 5.6K
R214 2.2K
*R216 220
*C209 0.0027
R210 5.6K
R211 36K
*R215 36K
JP202
FROM COMB
COMB RETURN
FROM BPF
GND
REC FM
PB FM
B. ID
COL ROT
REC COLOUR
PB FM/COL
TO VIDEO UNIT CN2 (Page 4-30)
B203
D250
**B204
B205
JP203
PB COL. OUT
PB COL. IN
C. SYNC
A. MUTE(L)
AUX OUT
TUNER OUT
VIDEO IN
AGC CTL
C205 4.7/50
*B206
TO VIDEO UNIT CN3 (Page 4-30)
**L270 100μ
**DL270 PU60496
R270 270
C270 0.01
R271 270
C271 0.01
R272 1.1K
R273 15K
R274 4.7K
R275 2.2K
Q270
Q271
R276 1.2K
R277 5.6K
C272 0.01
R278 10K
C273 0.01
C274 47/6.3
C275 0.01
Q272
R279 470
L271 39μ
C276 20P
C278 15P
C279 0.01
C280 24P
R280 3.6K
L272 10μ
C281 0.0027
R283 75K
R284 270K
R285 6.8K
C282 1/50
IC270 BA7045
Q273
C283 0.01
R287 820
R286 1K
C284 20P
L273 27μ
C287 4P
C286 27P
C288 0.01
R290 510
R291 1K
C289 33P
×2
CONV.
LOGIC
VCO
DET
H. H. K.
BGP GEN
BF
3dB
12dB
Vcc
B210
R220 100K
*B209
R221 560
R212 33K
*R230 5.6K
D201
D202
*Q279 DTC114W
TP201 GND
C206 0.01
*C207 0.01
SW_5V
GND
TO REGULATOR (Page 4-12)
CN201
NC
AVG FM
REC COLOUR
PB FM
REC FM
PB FM/COL
SP(L)
#REC ST(L)/REC CTL
D. FF
SW 5V
C. SYNC
WF1
WF2
WF3
WF4
TO PRE/REC CN501 (Page 4-45)
SP(L)
A/M/S_SEL
HEAD_SEL
AVG_FM
YNR_CTL
S/L/E_CTL
EE(L)
PB_SPE(L)
AUX(L)
CCIR(L)
REC(L)
REC_ST(L)
LP_SPE(H)
A. MUTE(L)
FRONT(H)
SHQ_ON(H)
MESECAM(L)
#B202
#B201
TO SYSCON (Page 4-23)
fsc
C. SYNC
V. PULSE
D. FF
TO SERVO (Page 4-22)
GND
VIDEO_OUT
VIDEO_IN
FRONT_VIDEO_OUT
TU_VIDEO_OUT
FRONT_VIDEO_IN
*B207
#B208
TU_VIDEO_IN
TO TERMINAL (Page 4-33,37)
TO TUNER (Page 4-16)
5
4
3
2
1
A
B
C
D
E
F
G
H

NOTE: 1

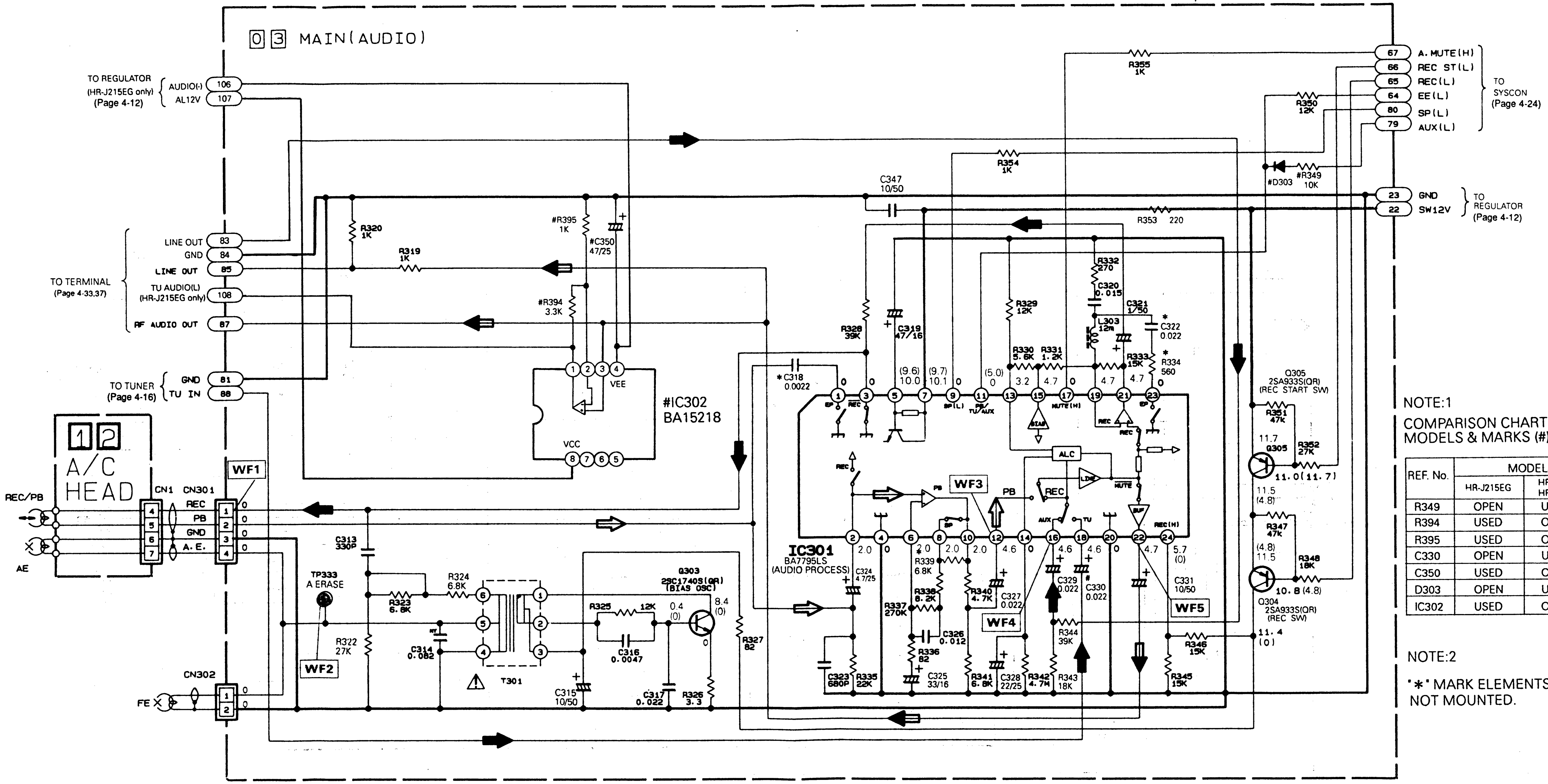
COMPARISON CHART OF MODELS & MARKS(#)

REF.NO.	MODELS	
	HR-J210E HR-J215E	HR-J215EG
B201	OPEN	USED
B202	USED	OPEN
B208	USED	OPEN

NOTE: 2

"*" AND "**" MARK ELEMENTS ARE NOT MOUNTED.

4.9 AUDIO SCHEMATIC DIAGRAM



03 MAIN(AUDIO)
TO REGULATOR (HR-J215EG only) (Page 4-12)
AUDIO(-) 106
AL12V 107
TO TERMINAL (Page 4-33,37)
LINE OUT 83
GND 84
LINE OUT 85
TU AUDIO(L) (HR-J215EG only) 108
RF AUDIO OUT 87
TO TUNER (Page 4-16)
GND 81
TU IN 88
12 A/C HEAD
REC/PB
AE
CN1 CN301
REC
PB
GND
A.E.
WF1
CN302
FE
TP333 A ERASE
WF2
C313 330P
R323 6.8K
R324 6.8K
R322 27K
C314 0.082
T301
R325 12K
C316 0.0047
C315 10/50
C317 0.022
R326 3.3
Q303 2SC1740S(QR) (BIAS OSC)
R327 82
R320 1K
R319 1K
#R395 1K
#C350 47/25
#R394 3.3K
#IC302 BA15218
VEE
VCC
*C318 0.0022
C347 10/50
R328 39K
C319 47/16
R329 12K
R330 5.6K
R331 1.2K
R332 270
C320 0.015
L303 12m
C321 1/50
*C322 0.022
R333 15K
*R334 560
R353 220
R354 1K
R355 1K
R350 12K
#R349 10K
#D303
IC301 BA7795LS (AUDIO PROCESS)
C324 47/25
WF3
WF4
WF5
ALC
LDA
MUTE
BUF
REC(H)
PB
REC
AUX
TU
R339 6.8K
R338 8.2K
R337 270K
C326 0.012
R336 82
C325 33/16
R340 4.7K
C327 0.022
R341 6.8K
C328 22/25
R342 4.7M
R343 18K
R344 39K
C329 0.022
#C330 0.022
C331 10/50
C323 680P
R335 22K
R346 15K
R345 15K
Q305 2SA933S(QR) (REC START SW)
R351 47K
R352 27K
R347 47K
R348 18K
Q304 2SA933S(QR) (REC SW)
67 A.MUTE(H)
66 REC ST(L)
65 REC(L)
64 EE(L)
80 SP(L)
79 AUX(L)
TO SYSCON (Page 4-24)
23 GND
22 SW12V
TO REGULATOR (Page 4-12)

NOTE:1

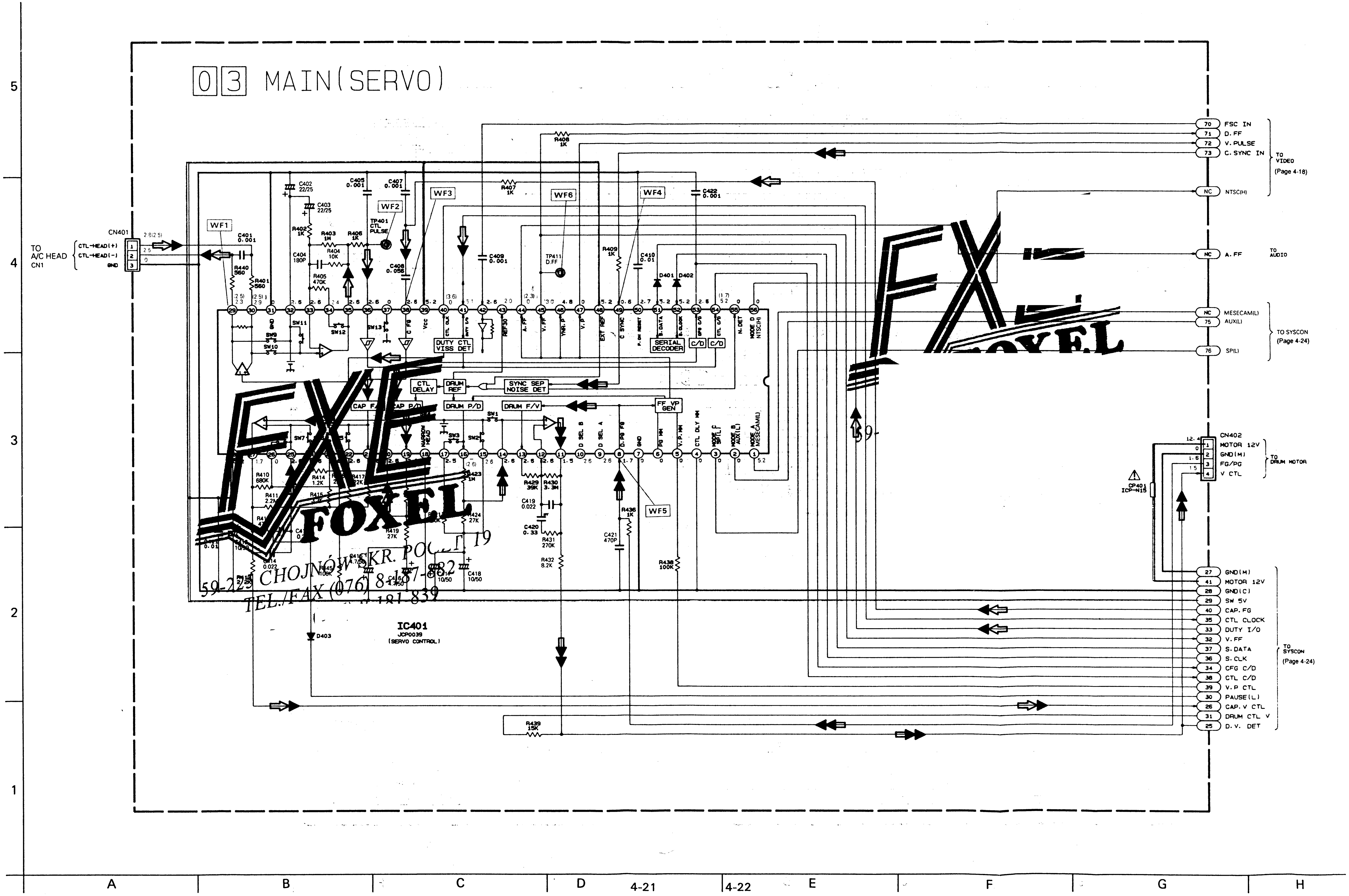
COMPARISON CHART OF MODELS & MARKS (#)

REF. No.	MODELS	
	HR-J215EG	HR-J210E HR-J215E
R349	OPEN	USED
R394	USED	OPEN
R395	USED	OPEN
C330	OPEN	USED
C350	USED	OPEN
D303	OPEN	USED
IC302	USED	OPEN

NOTE:2

"*" MARK ELEMENTS ARE NOT MOUNTED.

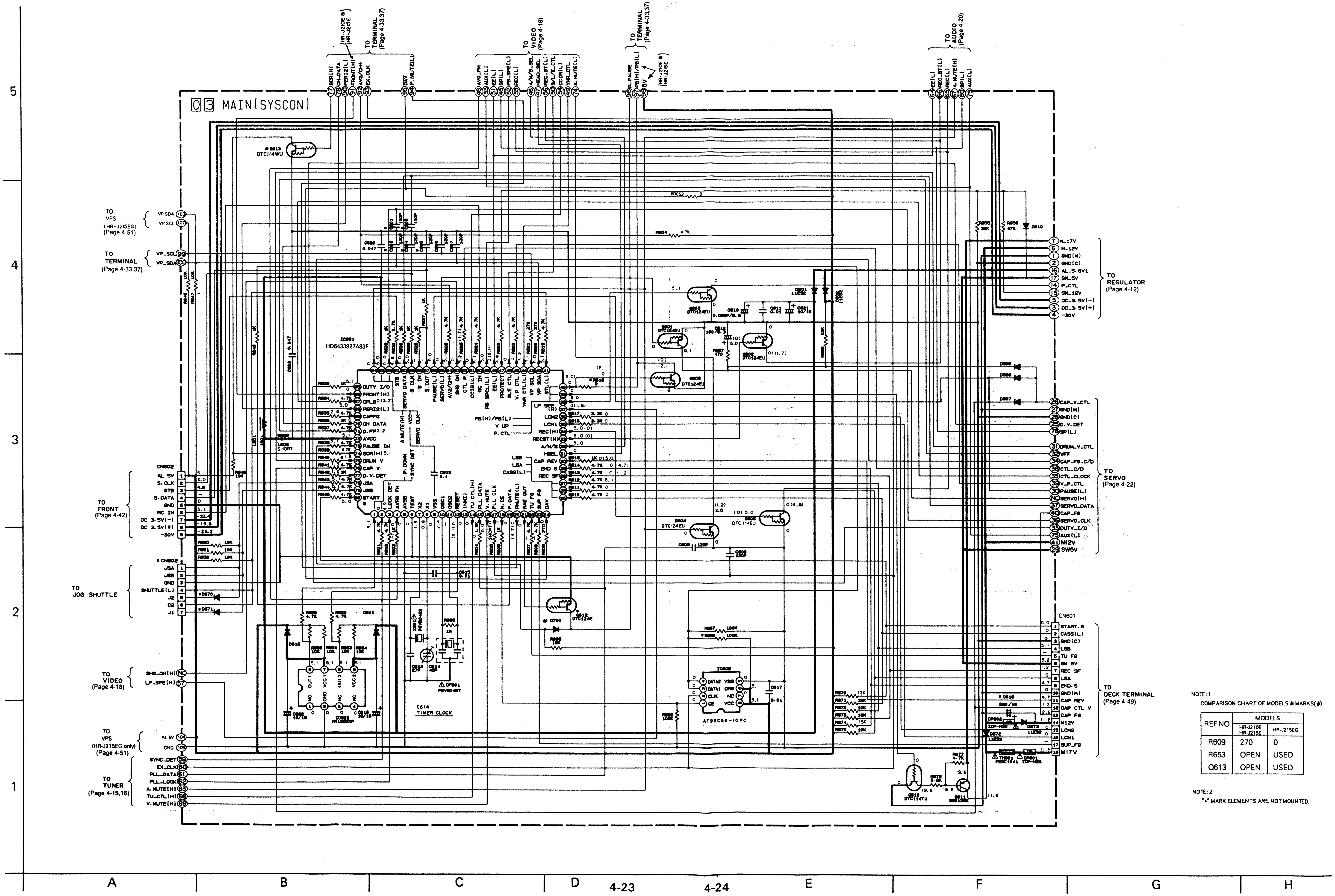
4.10 SERVO SCHEMATIC DIAGRAM



03 MAIN(SERVO)
TO A/C HEAD CN1
CN401
CTL-HEAD(+)
CTL-HEAD(-)
GND
WF1
WF2
WF3
WF4
WF5
WF6
C401 0.001
R440 560
R401 560
C402 22/25
C403 22/25
R402 1K
R403 1M
R404 10K
R405 470K
R406 1K
C404 180P
C405 0.001
C407 0.001
C408 0.056
TP401 CTL PULSE
R407 1K
R408 1K
C409 0.001
TP411 D.FF
R409 1K
C410 0.01
C422 0.001
D401
D402
SW9
SW10
SW11
SW12
SW13
Vcc
CTL CLK
DUTY CTL VISS DET
REF30
A.FF
V.FF
VNR.P
V.P
EXT REF
C SYNC
P.ON RESET
S.DATA
S.CLOCK
SERIAL DECODER
C/D
CFG C/D
CTL C/D
N.DET
MODE D NTSC(H)
CTL DELAY
DRUM REF
SYNC SEP NOISE DET
CAP F/V
CAP P/D
DRUM P/D
DRUM F/V
FF VP GEN
SW1
SW2
SW3
SW7
NARROW HEAD
D SEL B
D SEL A
D.PG FG
GND
PG MM
V.P. MM
CTL DLY MM
MODE C SP(L)
MODE B AUX(L)
MODE A MESECAM(L)
R410 680K
R411 2.2M
R414 1.2K
R415
R417 22K
R419 27K
R423 1M
R424 27K
R429 39K
R430 3.3M
C419 0.022
C420 0.33
R431 270K
R432 8.2K
R436 1K
C421 470P
R438 100K
C414 0.022
C416 4.7/50
C415 4.7/50
R445 100K
C417 10/50
C418 10/50
0.01
10/50
R439 15K
D403
IC401 JCP0039 (SERVO CONTROL)
70 FSC IN
71 D.FF
72 V.PULSE
73 C.SYNC IN
TO VIDEO (Page 4-18)
NC NTSC(H)
NC A.FF
TO AUDIO
NC MESECAM(L)
75 AUX(L)
76 SP(L)
TO SYSCON (Page 4-24)
CN402
1 MOTOR 12V
2 GND(M)
3 FG/PG
4 V CTL
TO DRUM MOTOR
CP401 ICP-N15
27 GND(M)
41 MOTOR 12V
28 GND(C)
29 SW 5V
40 CAP.FG
35 CTL CLOCK
33 DUTY I/O
32 V.FF
37 S.DATA
36 S.CLK
34 CFG C/D
38 CTL C/D
39 V.P CTL
30 PAUSE(L)
26 CAP.V CTL
31 DRUM CTL V
25 D.V. DET
TO SYSCON (Page 4-24)
5
4
3
2
1
A
B
C
D
E
F
G
H

FXE
FOXEL
59-225 CHOJNÓW SKR. POCZT. 19
TEL./FAX (076) 8-187-882
181 839

4.11 SYSCON SCHEMATIC DIAGRAM


03 MAIN(SYSCON)
TO TERMINAL (Page 4-33,37)
(HR-J210E & HR-J215E)
77 SCR(H)
78 CH_DATA
90 PERI2(L)
91 FRONT(H)
92 AV2/CH+
93 EX_CLK
95 DAV
94 P. MUTE(L)
TO VIDEO (Page 4-18)
48 AVG_FM
53 AUX(L)
51 EE(L)
45 SP(L)
52 PB_SPE(L)
55 REC(L)
46 A/N/S_SEL
47 HEAD_SEL
56 REC_ST(L)
50 S/L/E_CTL
54 CCIR(L)
49 YNR_CTL
74 A. MUTE(L)
TO TERMINAL (Page 4-33,37)
96 R_PAUSE
97 PB(H)/PB(L)
98 5V
(HR-J210E & HR-J215E)
TO AUDIO (Page 4-20)
64 EE(L)
66 REC_ST(L)
65 REC(L)
67 A. MUTE(H)
80 SP(L)
79 AUX(L)
TO VPS (HR-J215EG) (Page 4-51)
VP SDA 103
VP SCL 102
TO TERMINAL (Page 4-33,37)
VP_SCL 99
VP_SDA 100
CN802
AL 5V 1
S. CLK 2
STB 3
S. DATA 4
GND 5
RC IN 6
DC 3.5V(-) 7
DC 3.5V(+) 8
-30V 9
TO FRONT (Page 4-42)
* CN802
JSA 1
JSB 2
GND 3
SHUTTLE(L) 4
J2 5
C2 6
J1 7
TO JOG SHUTTLE
TO VIDEO (Page 4-18)
SHQ_ON(H) NC
LP_SPE(H) 57
TO VPS (HR-J215EG only) (Page 4-51)
AL 5V 104
GND 105
TO TUNER (Page 4-15,16)
SYNC_DET 59
EX_CLK 60
PLL_DATA 61
PLL_LOCK 62
A. MUTE(H) 63
TU_CTL(H) 68
V. MUTE(H) 69
IC601 HD6433927A83F
IC602 AT93C56-10PC
C614 TIMER CLOCK
# Q613 DTC114WU
R653 0
7 M_17V
6 M_12V
1 GND(M)
2 GND(C)
16 AL_5.6V1
17 SW_5V
14 P_CTL
15 SW_12V
5 DC_3.5V(-)
3 DC_3.5V(+)
4 -30V
TO REGULATOR (Page 4-12)
26 CAP_V_CTL
27 GND(M)
28 GND(C)
25 D. V. DET
76 SP(L)
31 DRUM_V_CTL
32 VFF
34 CAP_FG_C/D
38 CTL_C/D
35 CTL_CLOCK
39 V_P_CTL
30 PAUSE(L)
NC SERVO(H)
37 SERVO_DATA
40 CAP_FG
36 SERVO_CLK
33 DUTY_I/O
75 AUX(L)
41 MI2V
29 SW5V
TO SERVO (Page 4-22)
CN601
1 START. S
2 CASS(L)
3 GND(C)
4 LSB
5 TU FG
6 SW 5V
7 REC SF
8 LSA
9 END. S
10 GND(M)
11 CAP REV
12 CAP CTL V
13 CAP FG
14 M12V
15 LCM2
16 LCM1
17 SUP_FG
18 MI7V
TO DECK TERMINAL (Page 4-49)
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTE: 1

COMPARISON CHART OF MODELS & MARKS(#)

REF.NO.	MODELS	
	HR-J210E HR-J215E	HR-J215EG
R609	270	0
R653	OPEN	USED
Q613	OPEN	USED

NOTE: 2

"*" MARK ELEMENTS ARE NOT MOUNTED.

— for MAIN BOARD —

MAIN CONPONENT PARTS LOCATION GUIDE

<MAIN PWB>

REF. No.	LOCATION
IC	
IC301	9M
IC302	5M
IC401	6H
IC601	17E
IC602	17G
IC603	16G

REF. No.	LOCATION
TRANSISTOR	
Q1	19M
Q2	19M
Q3	17M
Q11	13N
Q12	15N
Q13	15M
Q14	15N
Q15	14N
Q16	13N
Q303	11N
Q304	8N
Q305	7N
Q601	16C
Q602	14J
Q603	18C
Q604	15F
Q605	15J
Q608	18C
Q610	19I
Q611	17J
Q613	15G
Q701	19N
Q702	19M
Q801	21C
Q802	20D
Q803	20D
Q804	21E
Q805	21C

REF. No.	LOCATION
DIODE	
D1	17M
D2	14N
D3	13N
D4	14N
D201	7K
D202	6K
D303	8O
D401	10I
D402	10I
D403	15C
D601	19E
D602	19E
D605	16B
D606	16B
D607	15H
D610	19B
D611	16I
D612	15H
D672	18K
D673	18K
D701	19N
D703	20M
D802	20C
D803	20C
D804	20F

REF. No.	LOCATION
CONNECTOR	
CN201	5L
CN301	14L
CN302	14L
CN401	15K
CN402	13K
CN601	16K
CN602	21B
CN712	3O
CN713	6O
CN801	21E
CN802	21A

REF. No.	LOCATION
ADJUSTMENT	
R805	20C
C614	17F

REF. No.	LOCATION
TEST POINT	
TP201	4M
TP333	12L
TP401	2D
TP411	3E
TP801	22B
TP802	20B

REF. No.	LOCATION
CP	
CP401	13K
CP601	17J
CP602	18K
CP801	21E

LEADLESS COMPONENT PARTS LOCATION GUIDE

<MAIN PWB>

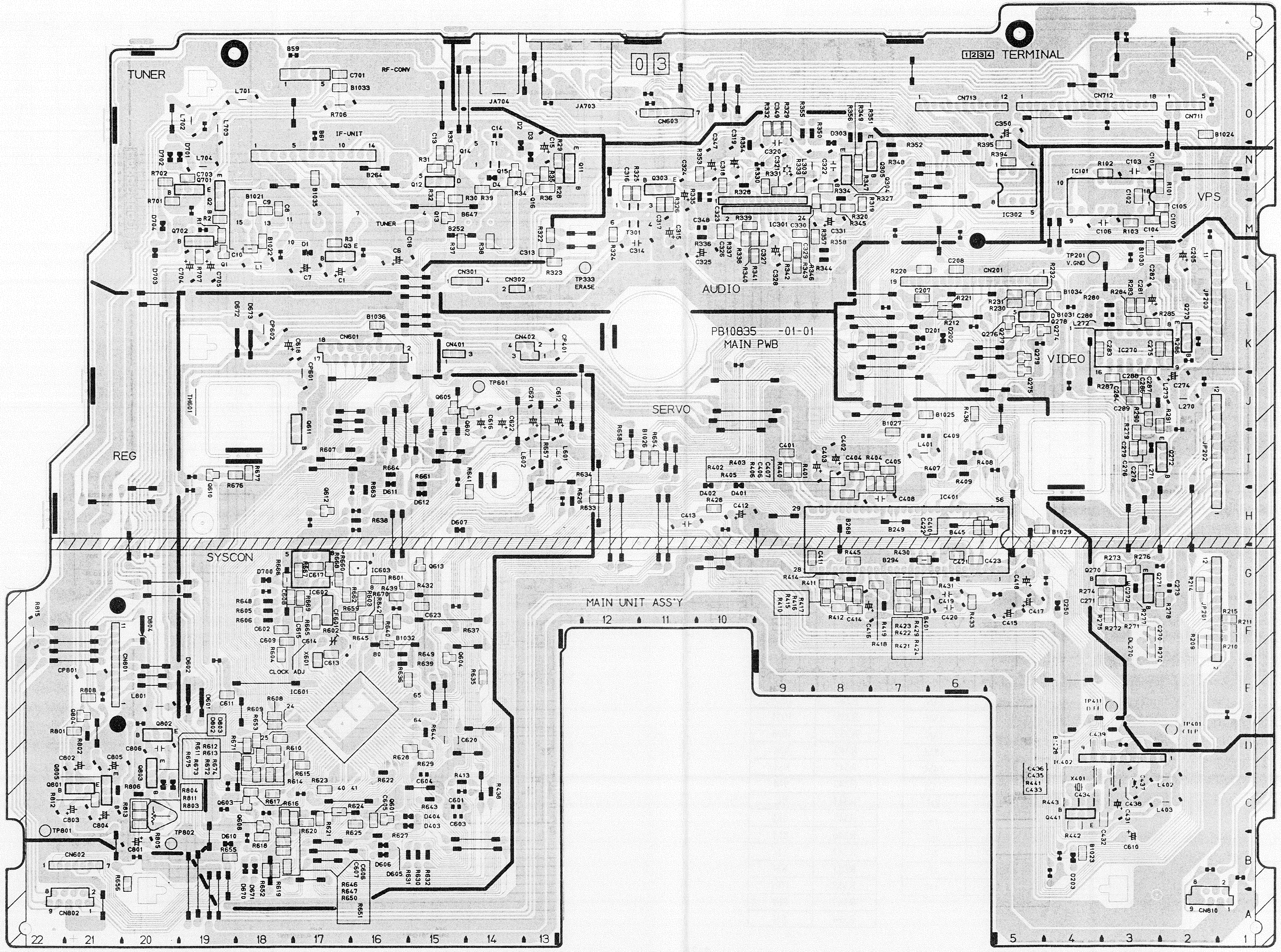
REF. No.	LOCATION
IC	
IC601	17E
IC603	16G

REF. No.	LOCATION
TRANSISTOR	
Q1	19M
Q13	15M
Q14	15N
Q15	14N
Q16	13N
Q274	4K
Q275	5K
Q276	5K
Q277	5K
Q279	5K
Q601	16C
Q602	14J
Q603	18C
Q604	15F
Q605	15J
Q608	18C
Q610	19I
Q612	17H
Q613	15G
Q804	21E

REF. No.	LOCATION
RESISTOR	
R1	19M
R2	19M
R3	17M
R28	13N
R29	13N
R30	15N
R31	15N
R32	15N
R33	15N
R34	14N
R35	13N
R36	13N
R37	15M
R38	14M
R39	14N
R101	2N
R102	3N
R103	3M
R209	2F
R210	1F
R211	1F
R212	6K
R214	2G
R215	1F
R220	7L
R221	6L
R230	5L
R231	5L
R232	5L
R270	3F
R271	3F
R272	3F
R273	3G
R274	3G
R275	3F
R276	3G
R278	2F
R279	3I
R283	3L
R284	3K
R285	3K
R286	2K
R287	3J
R290	3J
R291	2J
R319	8M
R320	8M
R322	13M
R323	13L
R324	12M
R325	12N
R326	11M
R329	9O
R330	9N
R331	9N
R332	9O
R333	9N
R334	8N
R337	10M
R338	10M
R339	10M
R340	9M
R341	9M
R342	9M
R343	9L
R345	8M
R346	8M
R347	8N
R351	8N
R353	10N
R357	8M
R394	5N
R395	5N
R401	9I
R402	8I
R403	8I
R404	7I
R405	8H
R406	8I
R410	8G
R411	8G
R412	8F
R415	8G
R416	8G
R417	8G
R418	7G
R421	7F
R422	7G
R423	7G
R424	7F
R428	10H
R429	7G
R430	7G
R431	6G
R432	15G
R433	6F
R436	6J
R439	16G
R440	9I
R441	3C
R442	4C
R443	4C
R445	8G
R601	16G
R602	17F
R603	16G
R604	18F
R608	18E
R609	18D
R610	18D
R611	18D
R612	18D
R613	18D
R614	17D
R615	17D
R616	18C
R617	18C
R618	18B
R619	18B
R620	17C
R621	17C
R623	17C
R624	17C
R625	16C
R628	15D
R629	15D
R633	12H
R634	12H
R635	14E
R636	16E
R640	16F
R641	14H
R642	16F
R645	16F
R646	18B
R647	18B
R650	18B
R651	18B
R652	18B
R653	18D
R654	11I
R655	19B
R656	20B
R657	13I
R658	12I
R659	17F
R660	17G
R662	17G
R665	17F
R666	18G
R667	17G
R668	17G
R669	17G
R670	16F
R671	18D
R672	18C
R673	18C
R674	18C
R675	18D
R676	19I
R677	18I
R701	20M
R702	20N
R707	19L
R801	21D
R803	20C
R804	20C
R808	21E
R811	20C
R812	21C

REF. No.	LOCATION
CAPACITOR	
C8	18M
C9	18M
C10	18M
C13	15N
C18	15M
C101	3N
C102	3N
C104	3M
C105	2M
C107	2M
C207	7L
C208	6L
C270	3F
C271	3G
C272	3G
C275	3K
C276	3I
C278	3I
C279	3I
C281	3L
C284	3J
C286	3J
C287	3J
C288	3J
C289	3J
C313	13M
C316	12N
C317	11M
C318	10N
C326	10M
C327	9M
C329	9M
C330	9M
C349	9O
C401	9I
C404	8I
C405	7I
C406	7I
C407	7I
C410	5H
C411	8G
C414	8F
C421	6G
C422	6H
C423	6G
C432	3C
C433	4C
C434	4C
C435	3C
C436	3D
C438	3C
C439	4D
C602	18F
C605	16C
C606	17C
C607	18C
C608	18G
C609	18F
C611	19E
C613	17F
C615	17F
C617	17G
C620	15D
C623	15F
C701	17P
C703	19N

4.12 MAIN CIRCUIT BOARD


TUNER
RF-CONV
IF-UNIT
JA704
JA703
0 3
CN603
1234 TERMINAL
CN713
CN712
CN711
IC101
VPS
IC302
IC301
AUDIO
TP333 ERASE
CN301
CN302
TP201 V.GND
CN201
PB10835 -01-01
MAIN PWB
VIDEO
IC270
CN601
CN401
CN402
TP601
TH601
SERVO
REG
IC401
SYSCON
IC603
IC602
IC601
CLOCK ADJ
MAIN UNIT ASS'Y
CN801
CP801
TP801
TP802
CN602
CN802
IC402
TP411
TP401
X401
CN610
JP203
JP202
JP201
P
O
N
M
L
K
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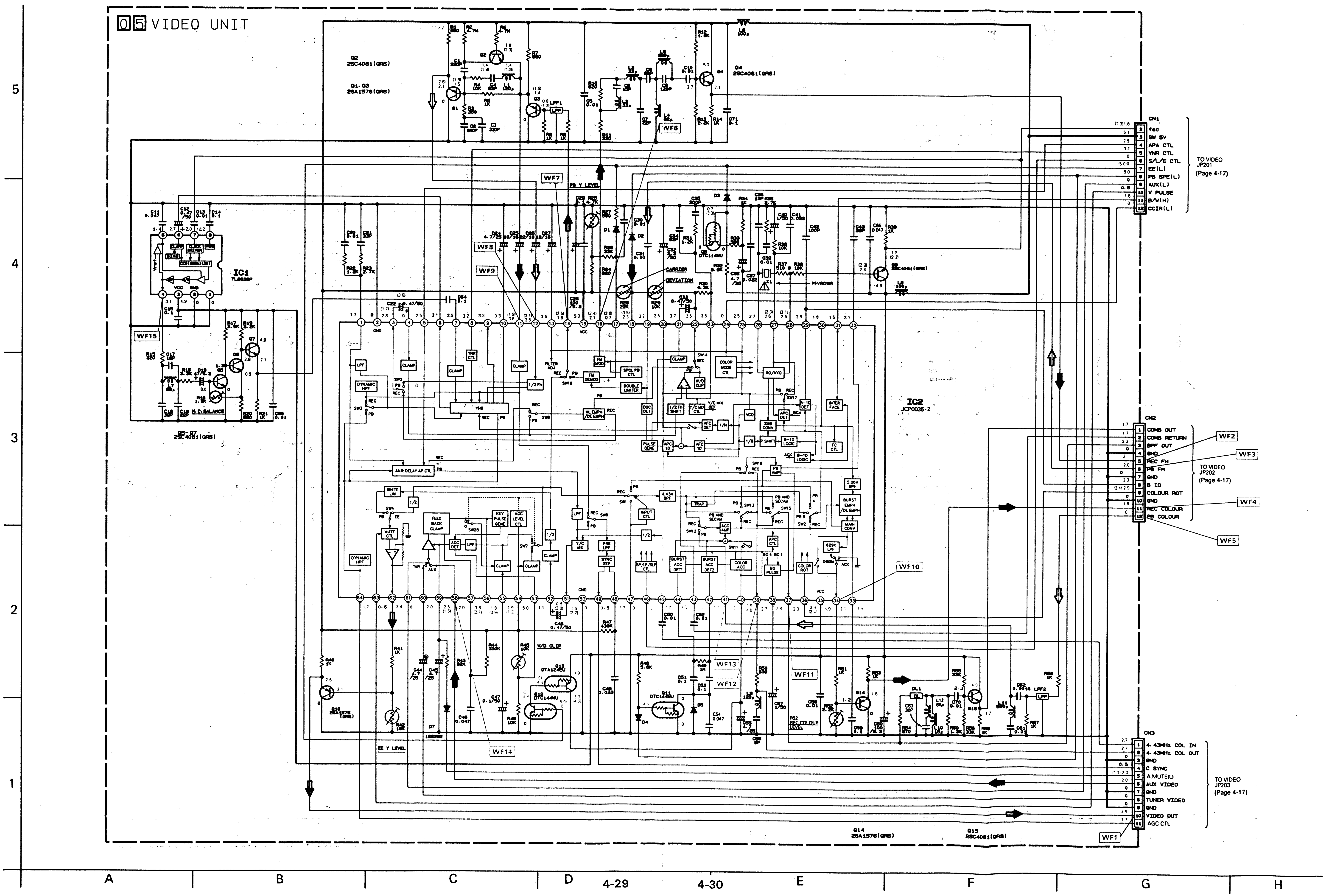
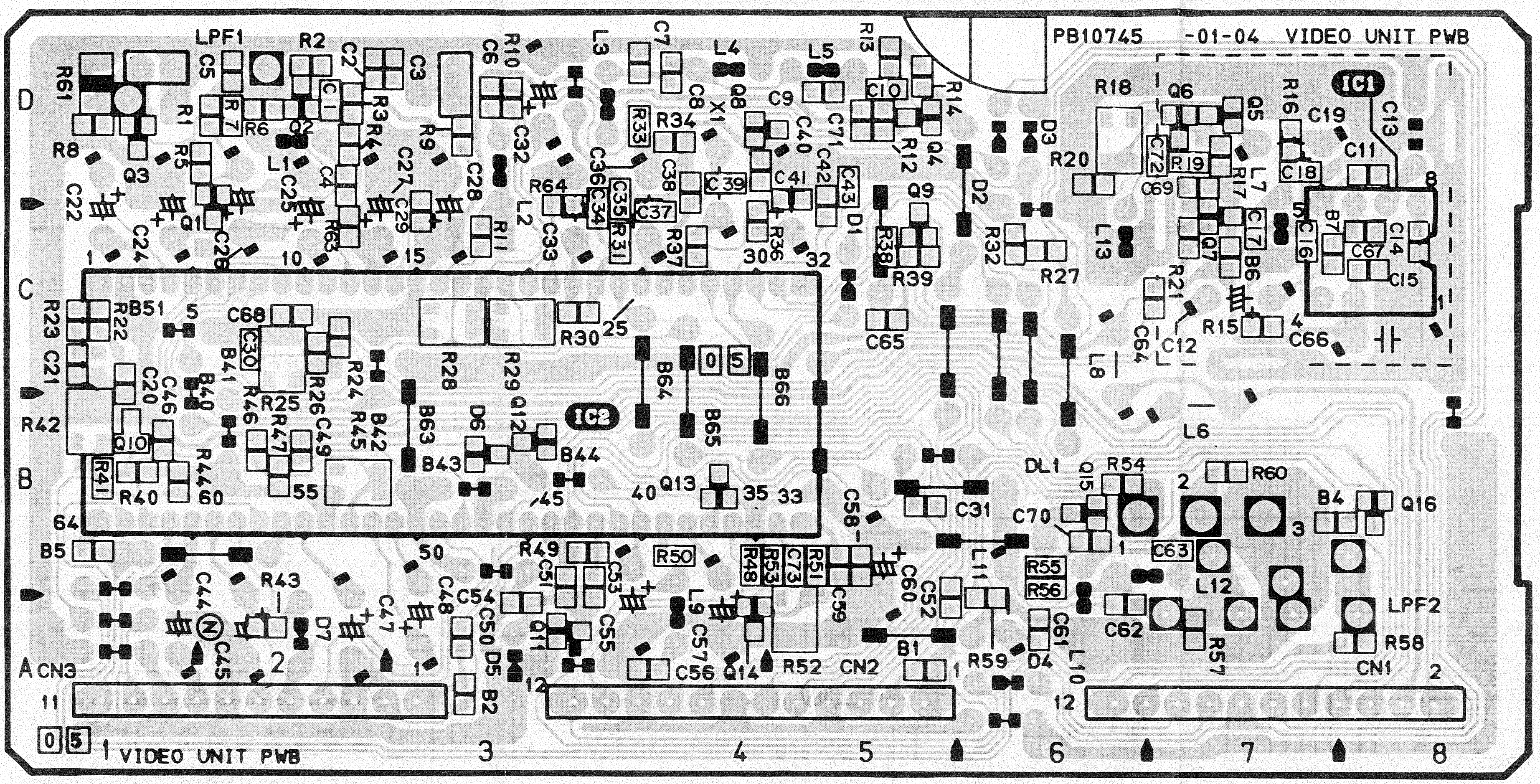
4.13 VIDEO UNIT SCHEMATIC DIAGRAM


05 VIDEO UNIT
IC1
TL8839P
IC2
JCP0035-2
Q1, Q3
2SA1576(QRS)
Q2
2SC4081(QRS)
Q4
2SC4081(QRS)
Q5-Q7
2SC4081(QRS)
Q10
2SA1576(QRS)
Q14
2SA1576(QRS)
Q15
2SC4081(QRS)
Q8
DTC114WU
Q11
DTC124EU
Q12
DTC144WU
Q13
DTA124EU
Q9
2SC4081(QRS)
D7
1SS292
PEV8038S
LPF1
LPF2
DL1
PB Y LEVEL
CARRIER
DEVIATION
H.C.BALANCE
EE Y LEVEL
W/D CLIP
REC COLOUR LEVEL
CLAMP
LPF
YNR
YNR CTL
1/2 Fh
FILTER ADJ
FM MOD
FM DEMOD
SPCL PB CTL
DOUBLE LIMITER
NL EMPH /DE EMPH
DOC DET
PULSE GENE
COLOR MODE CTL
XO/VXO
1/2 Fh SHIFT
Y/C MIX CTL
AFC DET
APC DET
VCO
SUB CONV
1/8
B-10 LOGIC
B-ID DET
INTER FACE
FC CTL
APC 1D
AFC 1D
DYNAMIC HPF
ANR DELAY AP CTL
WHITE LIM
MUTE CTL
FEED BACK CLAMP
ACC DET
KEY PULSE GENE
AGC LEVEL CTL
Y/C MIX
PRE LPF
SYNC SEP
INPUT CTL
4.43M BPF
TRAP
PB AND SECAM
ACC AMP
SP/LP/SLP CTL
BURST ACC DET1
BURST ACC DET2
COLOR ACC
APC CTL
BG PULSE
COLOR ROT
626K LPF
5.06M BPF
BURST EMPH /DE EMPH
MAIN CONV
PB AMP
WF1
WF2
WF3
WF4
WF5
WF6
WF7
WF8
WF9
WF10
WF11
WF12
WF13
WF14
WF15
CN1
2 fsc
3 SW 5V
4 APA CTL
5 YNR CTL
6 S/L/E CTL
7 EE(L)
8 PB SPE(L)
9 AUX(L)
10 V PULSE
11 B/W(H)
12 CCIR(L)
TO VIDEO JP201 (Page 4-17)
CN2
1 COMB OUT
2 COMB RETURN
3 BPF OUT
4 GND
5 REC FM
6 PB FM
7 GND
8 B ID
9 COLOUR ROT
10 GND
11 REC COLOUR
12 PB COLOUR
TO VIDEO JP202 (Page 4-17)
CN3
1 4.43MHz COL IN
2 4.43MHz COL OUT
3 GND
4 C SYNC
5 A.MUTE(L)
6 AUX VIDEO
7 GND
8 TUNER VIDEO
9 GND
10 VIDEO OUT
11 AGC CTL
TO VIDEO JP203 (Page 4-17)
A
B
C
D
E
F
G
H
1
2
3
4
5

4.14 VIDEO UNIT CIRCUIT BOARD


PB10745 -01-04 VIDEO UNIT PWB
VIDEO UNIT PWB
0 5
A
B
C
D
1
2
3
4
5
6
7
8
IC1
IC2
CN1
CN2
CN3
LPF1
LPF2
DL1
X1
R61
R8
R1
R2
R3
R5
R6
R7
R9
R10
R11
R12
R13
R14
R15
R16
R17
R18
R19
R20
R21
R22
R23
R24
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R28
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R59
R60
R63
R64
C1
C2
C3
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C10
C11
C12
C13
C14
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C67
C68
C69
C70
C71
C72
C73
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
Q10
Q11
Q12
Q13
Q14
Q15
Q16
D1
D2
D3
D4
D5
D6
D7
L1
L2
L3
L4
L5
L6
L7
L8
L9
L10
L11
L12
L13
B1
B2
B4
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B43
B44
B51
B63
B64
B65
B66
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45
50
55
60
64
11
12

MAIN CONPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF. No.	LOCATION
IC	
IC1	8C
IC2	4B

REF. No.	LOCATION
TRANSISTOR	
Q1	2D
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B

REF. No.	LOCATION
DIODE	
D1	5C
D2	6D
D3	6D
D4	6A
D5	3A
D7	2A

REF. No.	LOCATION
CONNECTOR	
CN1	8A
CN2	5A
CN3	1A

REF. No.	LOCATION
ADJUSTMENT	
R18	6D
R25	2C
R28	3C
R29	3C
R42	1B
R45	2B
R52	5A

LEADLESS COMPONENT PARTS LOCATION GUIDE

<VIDEO UNIT PWB>

REF. No.	LOCATION
TRANSISTOR	
Q1	2D
Q2	2D
Q3	1D
Q4	5D
Q5	7D
Q6	7D
Q7	7C
Q8	4D
Q9	5C
Q10	1B
Q11	3A
Q12	3B
Q13	4B
Q14	4A
Q15	6B
Q16	8B

REF. No.	LOCATION
DIODE	
D6	3B

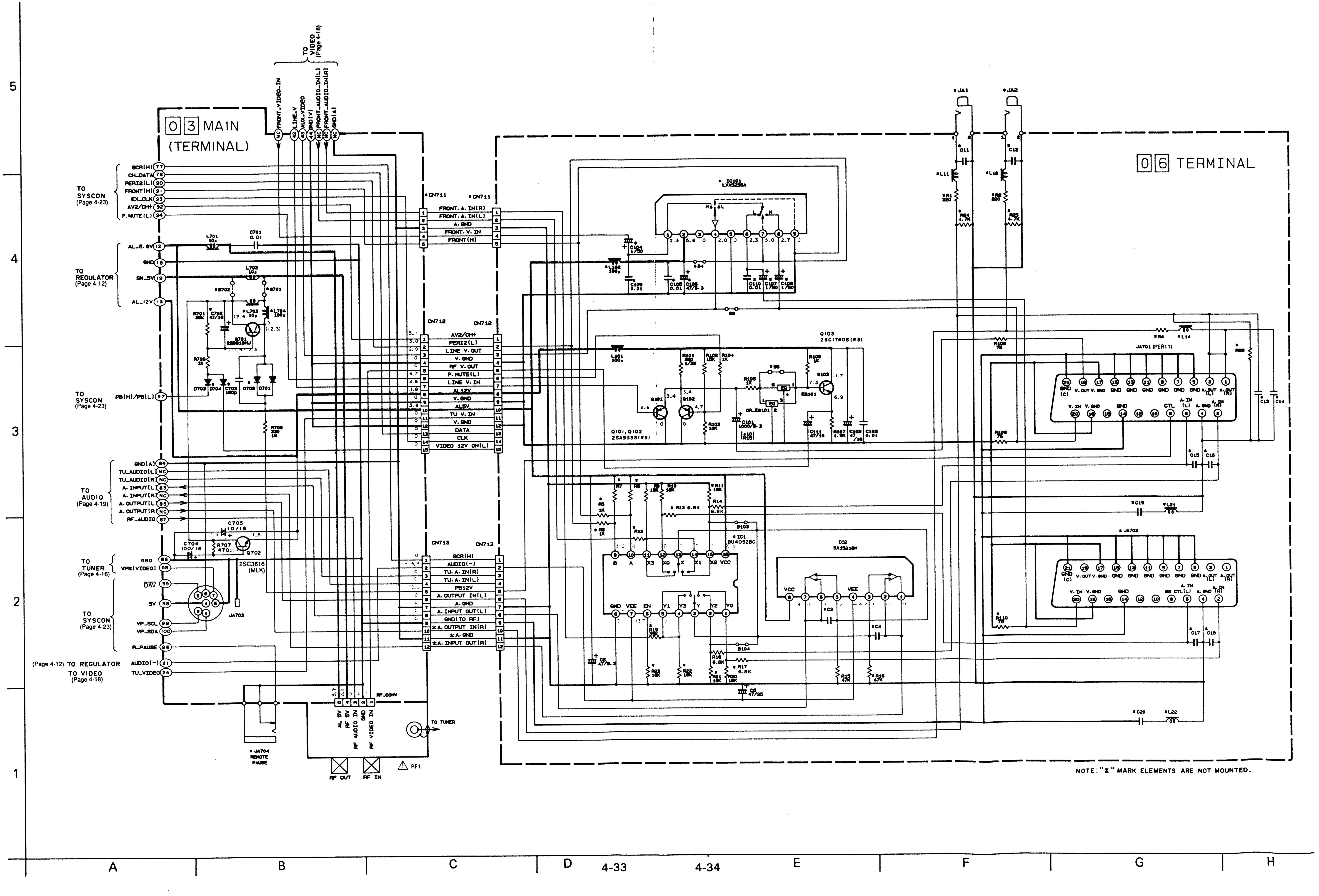
REF. No.	LOCATION
RESISTOR	
R1	2D
R2	2D
R3	2D
R4	2D
R5	2D
R6	2D
R7	2D
R8	1D
R9	3D
R10	3D
R11	3C
R12	5D
R13	5D
R14	5D
R15	7C
R16	7D
R17	7D
R18	6D
R19	7D
R20	6D
R21	7C
R22	1C

REF. No.	LOCATION
RESISTOR	
R23	1C
R24	2C
R25	2C
R26	2C
R27	6C
R28	3C
R29	3C
R30	3C
R31	4C
R32	6C
R33	4D
R34	4D
R35	4D
R36	4C
R37	4C
R38	5C
R39	5C
R40	1B
R41	1B
R42	1B
R43	2A
R44	1B
R45	2B
R46	2B
R47	2B
R48	4B
R49	4B
R50	4B
R51	5B
R52	5A
R53	5B
R54	6B
R55	6B
R56	6B
R57	7A
R58	8A
R59	6A
R60	7B
R61	1D
R62	2C
R63	3D
R64	3C

REF. No.	LOCATION
CAPACITOR	
C1	2D
C2	2D
C3	3D

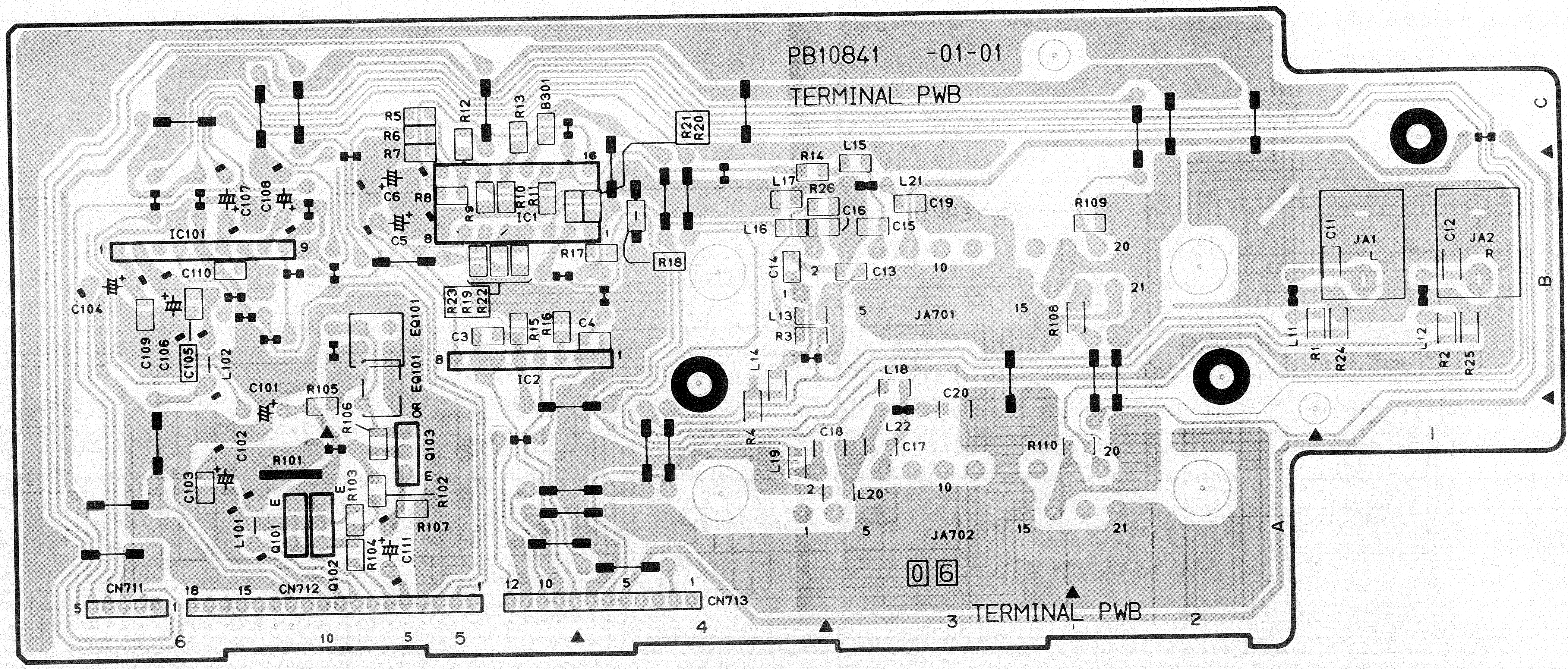
REF. No.	LOCATION
CAPACITOR	
C4	2D
C5	2D
C6	3D
C7	4D
C8	4D
C9	5D
C10	5D
C11	8D
C14	8C
C15	8C
C16	7C
C17	7C
C18	7D
C20	1C
C21	1C
C29	3C
C30	2C
C31	5B
C34	4D
C35	4D
C37	4C
C38	4D
C39	4D
C41	5D
C42	5D
C43	5D
C46	1B
C49	2B
C50	3A
C51	3B
C52	5A
C53	4B
C54	3A
C56	4A
C58	5B
C59	5B
C61	6A
C62	6A
C63	7B
C64	7C
C65	5C
C67	8C
C68	2C
C69	7D
C70	6B
C71	5D
C72	7D
C73	5B

4.15 TERMINAL & MAIN (TERMINAL) SCHEMATIC DIAGRAMS (for HR-J210E/J215E)


03 MAIN (TERMINAL)
06 TERMINAL
TO VIDEO (Page 4-18)
FRONT_VIDEO_IN
LINE_V
AUX_VIDEO
GND(V)
FRONT_AUDIO_IN(L)
FRONT_AUDIO_IN(R)
GND(A)
TO SYSCON (Page 4-23)
SCR(H) 77
CH_DATA 78
PERI2(L) 90
FRONT(H) 91
EX_CLK 93
AV2/CH+ 92
P.MUTE(L) 94
TO REGULATOR (Page 4-12)
AL_5.8V 12
GND 18
SW_5V 19
AL_12V 13
TO SYSCON (Page 4-23)
PB(H)/PB(L) 97
TO AUDIO (Page 4-19)
GND(A) 84
TU_AUDIO(L) NC
TU_AUDIO(R) NC
A.INPUT(L) 83
A.INPUT(R) NC
A.OUTPUT(L) 85
A.OUTPUT(R) NC
RF_AUDIO 87
TO TUNER (Page 4-16)
GND 86
VPS(VIDEO) 58
TO SYSCON (Page 4-23)
DAV 95
5V 98
VP_SCL 99
VP_SDA 100
R_PAUSE 96
(Page 4-12) TO REGULATOR AUDIO(-) 21
TO VIDEO (Page 4-18) TU_VIDEO 24
L701
C701 0.01
L702
S702
S701
R701
C702 47/16
L703
L704
Q701
R702 1K
D703 D704 C703 D702 D701
R706 330 1W
C705 10/16
C704 100/16
R707 470
Q702 2SC3616 (MLK)
JA703
JA704 REMOTE PAUSE
CN711
FRONT.A.IN(R)
FRONT.A.IN(L)
A.GND
FRONT.V.IN
FRONT(H)
CN712
AV2/CH+
PERI2(L)
LINE V.OUT
V.GND
RF V.OUT
P.MUTE(L)
LINE V.IN
AL12V
V.GND
AL5V
TU V.IN
V.GND
DATA
CLK
VIDEO 12V ON(L)
CN713
SCR(H)
AUDIO(-)
TU.A.IN(R)
TU.A.IN(L)
PB12V
A.OUTPUT IN(L)
A.GND
A.INPUT OUT(L)
GND(TO RF)
*A.OUTPUT IN(R)
*A.GND
*A.INPUT OUT(R)
RF_CONV
AL 5V
RF 5V
RF AUDIO IN
GND
RF VIDEO IN
TO TUNER
RF OUT
RF IN
RF1
IC101 LVA2236A
C104 1/50
L102 100μ
C109 0.01
C105 0.01
C106 47/6.3
S4
C110 0.01
C107 1/50
C108 1/50
S6
Q103 2SC1740S(RS)
L101 100μ
R101
R102 15K
R104 1K
R106 1K
R105 1K
S5
EG101
Q101
Q102
Q101, Q102 2SA933S(RS)
R103 10K
C101 1000/6.3
C111 47/10
R107 1.5K
C102 47/16
C103 0.01
R7
R8
R9 15K
R10 15K
R11 15K
R14 6.8K
R13 6.8K
R5 1K
R6 1K
R12
S103
IC1 BU4052BC
IC2 BA15218N
S104
R19
R23 15K
R22 15K
R18 6.8K
R21 15K
R20 15K
R17 6.8K
C5 47/25
C6 47/6.3
C3
C4
R15 47K
R16 47K
JA1
JA2
C11
C12
L11
L12
R1 220
R2 220
R4 4.7K
R5 4.7K
R108 75
R109 75
R110 75
R4
L14
R26
JA701 (PERI-1)
JA702
C13
C14
C15
C16
C17
C18
C19
L21
C20
L22
V.OUT
V.GND
GND
V.IN
CTL
A.IN
A.OUT
A.GND
1
2
3
4
5
A
B
C
D
E
F
G
H

NOTE: "x" MARK ELEMENTS ARE NOT MOUNTED.

4.16 TERMINAL CIRCUIT BOARD (for HR-J210E/J215E)


PB10841 -01-01
TERMINAL PWB
IC1
IC2
IC101
JA701
JA702
JA1 L
JA2 R
CN711
CN712
CN713
Q101
Q102
Q103
EQ101
R101
R105
R106
R107
R108
R109
R110
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
L101
L102
B301
06
A
B
C
1
2
3
4
5
6

MAIN CONPONENT PARTS LOCATION GUIDE
<TERMINAL PWB>

REF. No.	LOCATION
IC	
IC2	5B
IC101	6B

REF. No.	LOCATION
TRANSISTOR	
Q101	6A
Q102	6A
Q103	5A

REF. No.	LOCATION
CONNECTOR	
CN712	6A
CN713	4A

LEADLESS COMPONENT PARTS LOCATION GUIDE
<TERMINAL PWB>

REF. No.	LOCATION
RESISTOR	
R1	1B
R2	1B
R3	4B
R4	4A
R5	5C
R6	5C
R7	5C
R8	5B
R9	5B
R10	5B
R11	5B
R12	5C
R13	5C
R14	4B

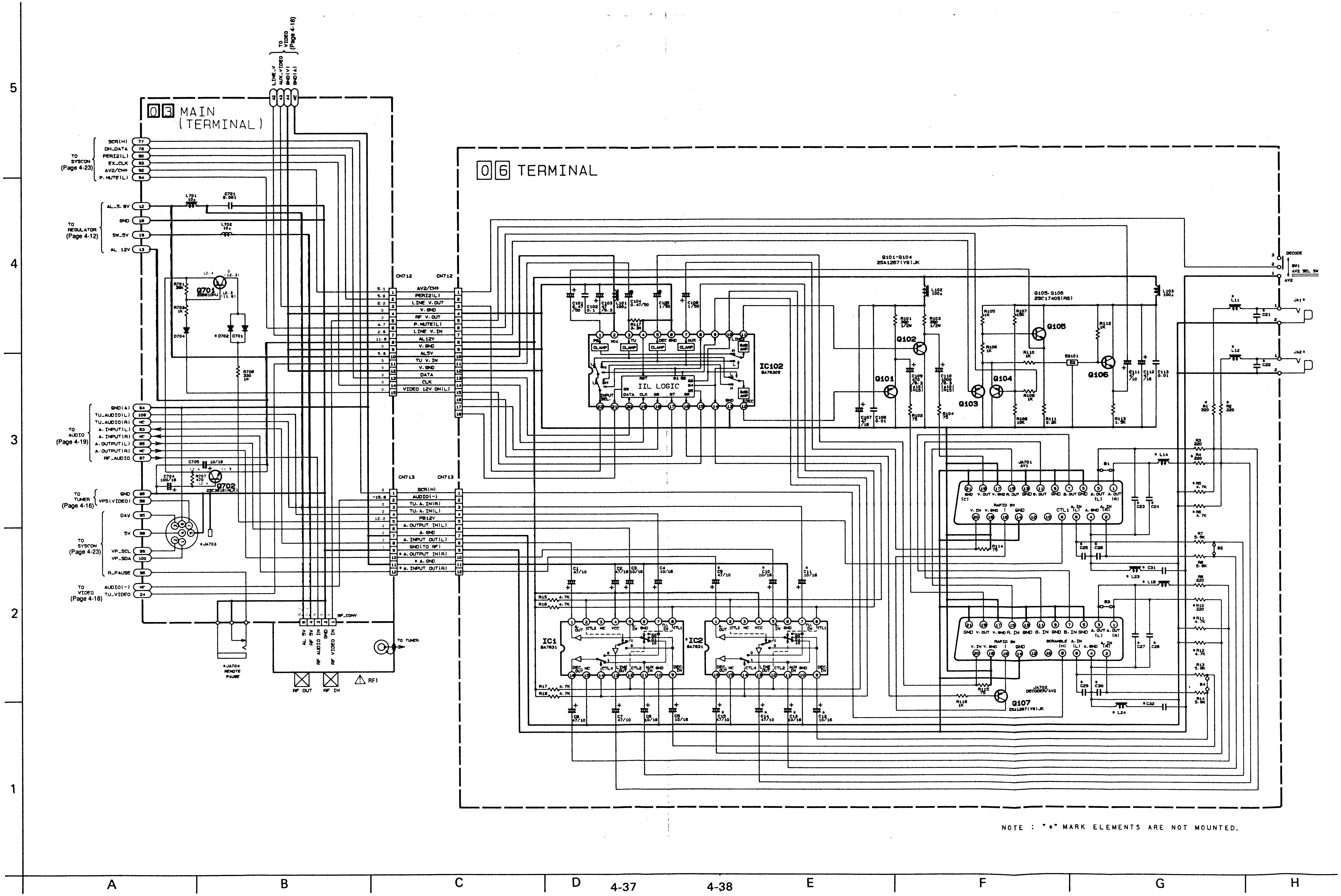
REF. No.	LOCATION
RESISTOR	
R15	4B
R16	5B
R17	4B
R18	4B
R19	5B
R20	4B
R21	4B
R22	5B
R23	5B
R24	1B
R25	1B
R102	5A
R103	5A
R104	5A

REF. No.	LOCATION
RESISTOR	
R105	6B
R106	5A
R107	5A
R108	2B
R109	2B
R110	2A

REF. No.	LOCATION
CAPACITOR	
C3	5B
C4	4B
C11	1B
C12	1B
C13	3B
C14	4B
C15	3B
C16	3B
C17	3A
C18	3A
C19	3B
C20	3A
C103	6A
C105	6B
C109	6B
C110	6B

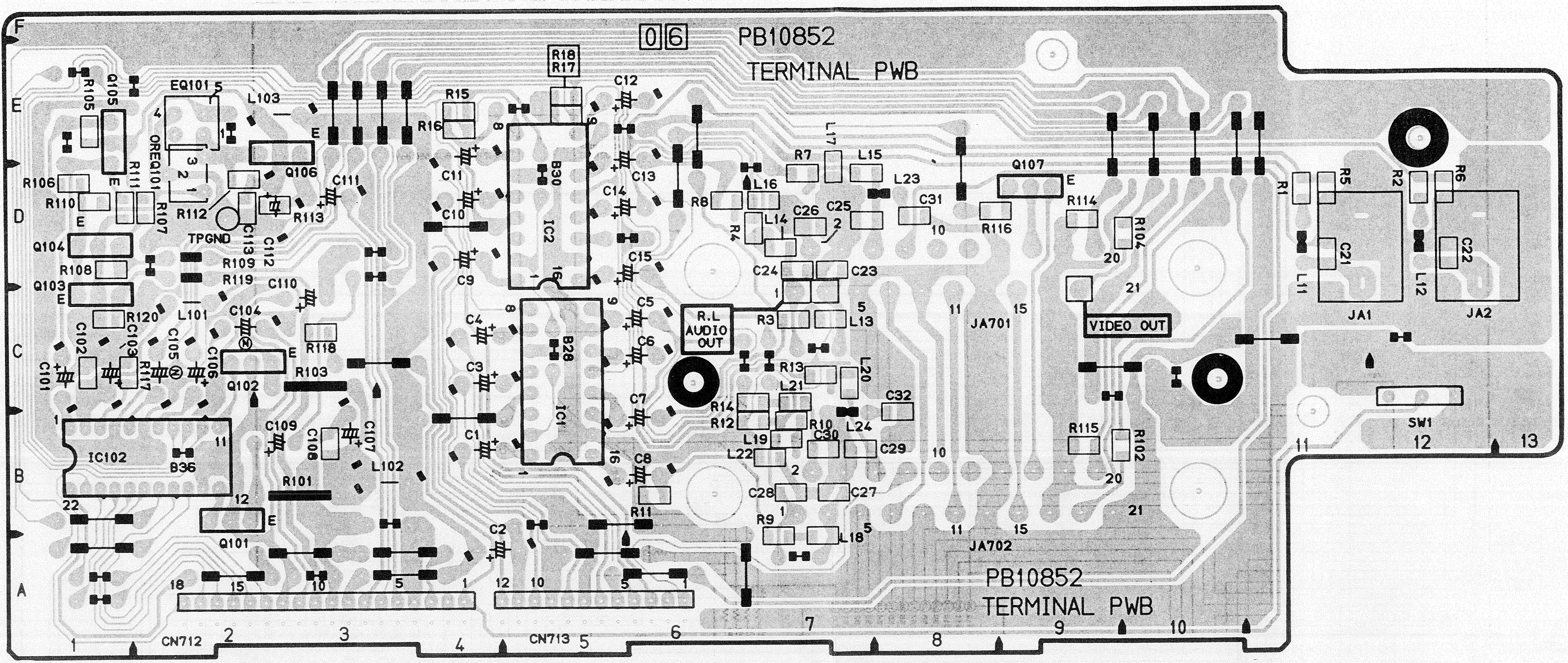
REF. No.	LOCATION
COIL	
L13	4B
L14	4B
L15	3C
L16	4B
L17	4B
L18	3B
L19	4A
L20	3A

4.17 TERMINAL & MAIN (TERMINAL) SCHEMATIC DIAGRAMS (for HR-J215EG)


03 MAIN (TERMINAL)
06 TERMINAL
TO VIDEO (Page 4-18)
LINE_V
AUX_VIDEO
GND(V)
GND(A)
42
43
44
NC
TO SYSCON (Page 4-23)
SCR(H) 77
DH_DATA 78
PERI2(L) 90
EX_CLK 93
AV2/CH+ 92
P. MUTE(L) 94
TO REGULATOR (Page 4-12)
AL_5.8V 12
GND 18
SW_5V 19
AL 12V 13
L701 10μ
C701 0.001
L702 10μ
Q701 2SB810HJ
R701 39K
R702 1K
D704
* D702
D701
R706 330 1W
TO AUDIO (Page 4-19)
GND(A) 84
TU_AUDIO(L) 108
TU_AUDIO(R) NC
A. INPUT(L) 83
A. INPUT(R) NC
A. OUTPUT(L) 85
A. OUTPUT(R) NC
RF_AUDIO 87
C705 10/16
C704 100/16
R707 470
Q702 2SC3818(HLK)
TO TUNER (Page 4-16)
GND 86
VPS(VIDEO) 58
TO SYSCON (Page 4-23)
DAV 95
5V 98
VP_SCL 99
VP_SDA 100
R_PAUSE 96
* JA703
TO VIDEO (Page 4-18)
AUDIO(-) NC
TU_VIDEO 24
* JA704 REMOTE PAUSE
RF_CONV
AL 5V
RF 5V
RF AUDIO IN
GND
RF VIDEO IN
TO TUNER
RF OUT
RF IN
RF1
CN712
1 AV2/CH+ 5.1
2 PERI2(L) 5.0
3 LINE V.OUT 2.0
4 V.GND 0
5 RF V.OUT 0
6 P.MUTE(L) 4.7
7 LINE V.IN 2.6
8 AL12V 11.8
9 V.GND 0
10 AL5V 5.8
11 TU V.IN 0
12 V.GND 0
13 DATA 0
14 CLK 0
15 VIDEO 12V ON(L) 0
CN713
1 SCR(H) 0
2 AUDIO(-) -15.8
3 TU.A.IN(R) 0
4 TU.A.IN(L) 0
5 PB12V 12.2
6 A.OUTPUT IN(L) 0
7 A.GND 0
8 A.INPUT OUT(L) 0
9 GND(TO RF) 0
10 * A.OUTPUT IN(R)
11 * A.GND
12 * A.INPUT OUT(R)
C101 0.47/50
C102 0.1
C103 47/6.3
L101 100μ
C104 0.47/50
C105 1/50
C106 1/50
R117 3.3M
IC102 BA7630S
PB
Vcc
TU
DEC
GND
AUX
LINE
CLAMP
6dB AMP
IIL LOGIC
RST
Q1
Q2
Q3
Q4
Q5
Q6
Q7
Q8
Q9
DATA
CLK
INPUT SEL.
DEC
Q101-Q104 2SA1267(Y6)JK
L102 100μ
R101 390 1/2W
R103 390 1/2W
Q101
Q102
Q103
Q104
C107 47/16
C108 0.01
C109 470/6.3 (φ10 H15)
C110 1000/6.3 (φ10 H15)
R102 75
R104 75
Q105·Q106 2SC1740S(RS)
R105 1K
R106 1K
R107 15K
R108 10K
R109 1K
R110 1K
R111 2.2K
R112 1K
R113 1.5K
EQ101
Q105
Q106
C111 47/10
C112 47/16
C113 0.01
L103 100μ
DECODE
SW1 AV2 SEL SW
AV2
* L11
* C21
JA1 *
* L12
* C22
JA2 *
* R1 220
* R2 220
R3 220
* R4 220
* R5 4.7K
* R6 4.7K
R7 5.6K
R8 5.6K
B2
R9 220
* R10 220
* R11 4.7K
* R12 4.7K
R13 5.6K
R14 5.6K
B4
* L14
B1
* C23
* C24
* C25
* C26
* L23
* C31
* L18
B3
* C27
* C28
* C29
* C30
* L24
* C32
JA701 AV1
GND (C)
V.OUT
V.GND
R.OUT
B.OUT
A.OUT (L)
A.OUT (R)
RAPID SW
V.IN
CTL1
A.IN (L)
A.GND
A.IN (R)
R114 75
JA702 DECODER/AV2
R.IN
G.IN
B.IN
SCRAMBLE (H)
R115 75
R116 1K
Q107 2SA1267(Y6)JK
IC1 BA7631
* IC2 BA7631
A. OUT
CTL3
NC
VCC
A. IN
TU. IN
CTL1
DEC. OUT
CTL4
LINE OUT
CTL2
AUX IN
DEC. IN
R15 4.7K
R16 4.7K
R17 4.7K
R18 4.7K
C1 47/10
C2 47/16
C3 10/16
C4 10/16
* C9 47/10
* C10 10/16
* C11 10/16
C8 47/10
C7 47/10
C6 10/16
C5 10/16
* C15 47/10
* C14 47/10
* C13 10/16
* C12 10/16
5
4
3
2
1
A
B
C
D
E
F
G
H

NOTE : "*" MARK ELEMENTS ARE NOT MOUNTED.

4.18 TERMINAL CIRCUIT BOARD (for HR-J215EG)


06
PB10852
TERMINAL PWB
F
E
D
C
B
A
1
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3
4
5
6
7
8
9
10
11
12
13
CN712
CN713
JA701
JA702
JA1
JA2
SW1
VIDEO OUT
R.L AUDIO OUT
IC1
IC2
IC102
B28
B30
B36
EQ101
OREQ101
TPGND
Q101
Q102
Q103
Q104
Q105
Q106
Q107
R1
R2
R3
R4
R5
R6
R7
R8
R9
R10
R11
R12
R13
R14
R15
R16
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R101
R102
R103
R104
R105
R106
R107
R108
R109
R110
R111
R112
R113
R114
R115
R116
R117
R118
R119
R120
C1
C2
C3
C4
C5
C6
C7
C8
C9
C10
C11
C12
C13
C14
C15
C21
C22
C23
C24
C25
C26
C27
C28
C29
C30
C31
C32
C101
C102
C103
C104
C105
C106
C107
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C109
C110
C111
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L20
L21
L22
L23
L24
L101
L102
L103
PB10852
TERMINAL PWB

MAIN COMPONENT PARTS LOCATION GUIDE

<TERMINAL PWB>

REF. No.	LOCATION
IC	
IC1	5B
IC102	1B

REF. No.	LOCATION
CONNECTOR	
CN712	2A
CN713	5A

REF. No.	LOCATION
TRANSISTOR	
Q101	2B
Q102	2C
Q103	1C
Q104	1D
Q105	1E
Q106	3E
Q107	9D

LEADLESS COMPONENT PARTS LOCATION GUIDE

<TERMINAL PWB>

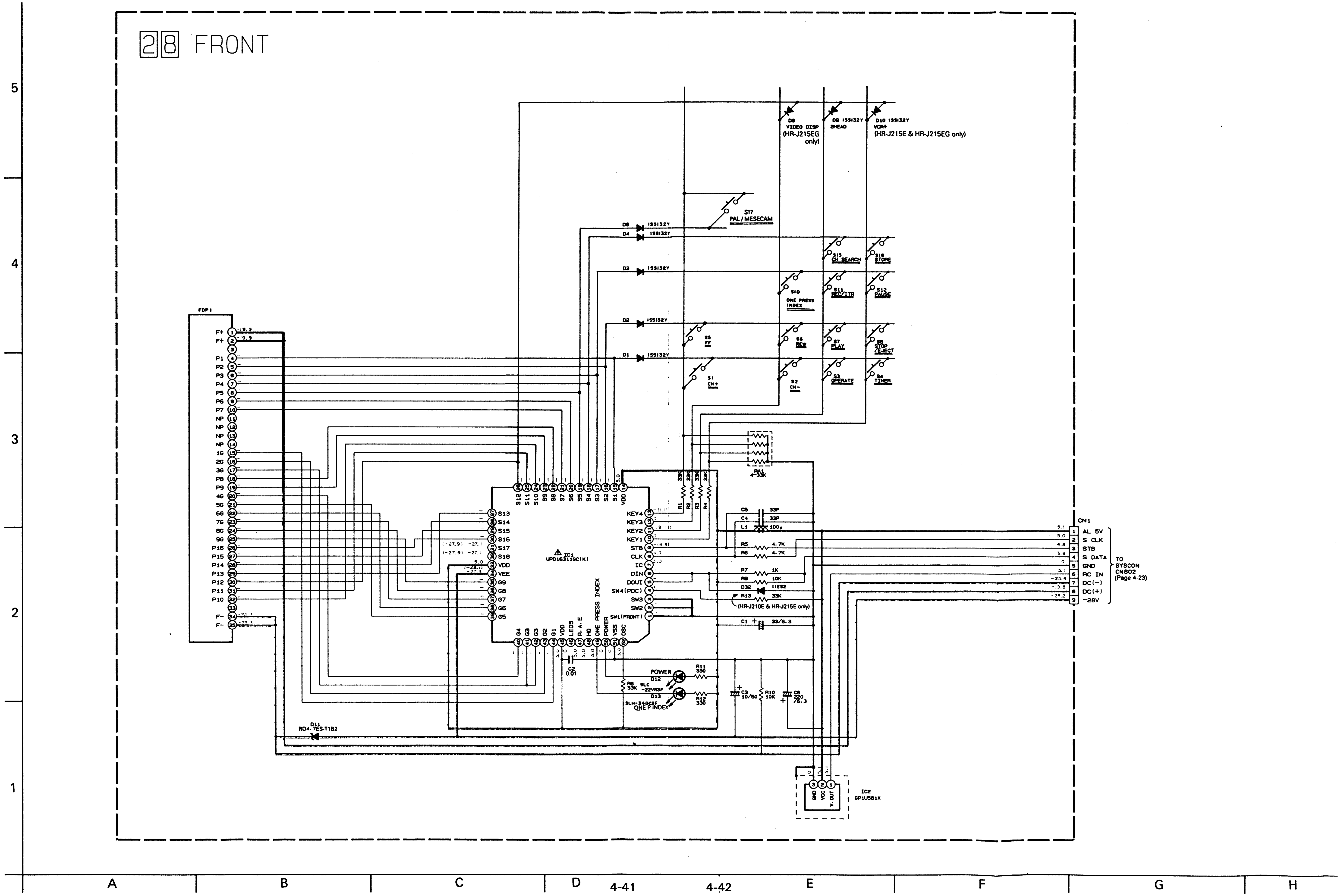
REF. No.	LOCATION
RESISTOR	
R1	11D
R2	12D
R3	7C
R4	6D
R5	11D
R6	12D
R7	7D
R8	6D
R9	7A
R10	7B
R11	6B
R12	6B
R13	7C
R14	6B
R15	4E

REF. No.	LOCATION
RESISTOR	
R16	4E
R17	5E
R18	5E
R102	10B
R104	10D
R105	1E
R106	1D
R107	2D
R108	1D
R110	1D
R111	2D
R112	2D
R113	3D
R114	9D
R115	9B

REF. No.	LOCATION
RESISTOR	
R116	8D
R117	2C
R118	3C
R120	1C

REF. No.	LOCATION
CAPACITOR	
C21	11D
C22	12D
C23	7D
C24	7D
C25	7D
C26	7D
C27	7B
C28	7B
C29	8B
C30	7B
C31	8D
C32	8B
C102	1C
C108	3B
C113	2D

4.19 FRONT SCHEMATIC DIAGRAM



28 FRONT
5
4
3
2
1
A
B
C
D
E
F
G
H
FDP1
F+
F+
P1
P2
P3
P4
P5
P6
P7
NP
NP
NP
NP
1G
2G
3G
P8
P9
4G
5G
6G
7G
8G
9G
P16
P15
P14
P13
P12
P11
P10
F-
F-
19.9
19.9
IC1
UPD16311GC(K)
S13
S14
S15
S16
S17
S18
VDD
VEE
G9
G8
G7
G6
G5
S12
S11
S10
S9
S8
S7
S6
S5
S4
S3
S2
S1
VDD
KEY4
KEY3
KEY2
KEY1
STB
CLK
IC
DIN
DOUT
SW4(PDC)
SW3
SW2
SW1(FRONT)
G4
G3
G2
G1
VDD
LED5
R.A.E
HQ
ONE PRESS INDEX
POWER
VSS
OSC
D6 1SS132Y
D4 1SS132Y
D3 1SS132Y
D2 1SS132Y
D1 1SS132Y
S17
PAL / MESECAM
D8
VIDEO DISP
(HR-J215EG only)
D9 1SS132Y
2HEAD
D10 1SS132Y
VCR+
(HR-J215E & HR-J215EG only)
S15
CH SEARCH
S16
STORE
S10
ONE PRESS INDEX
S11
REC/ITR
S12
PAUSE
S5
FF
S6
REW
S7
PLAY
S8
STOP /EJECT
S1
CH+
S2
CH-
S3
OPERATE
S4
TIMER
RA1
4-33K
R1 33K
R2 33K
R3 33K
R4 33K
C5 33P
C4 33P
L1 100μ
R5 4.7K
R6 4.7K
R7 1K
R9 10K
D32 11ES2
R13 33K
(HR-J210E & HR-J215E only)
C1 33/6.3
C2 0.01
POWER
D12
SLC-22VR3F
R11 330
R8 33K
D13
SLH-34DC3F
ONE P INDEX
R12 330
C3 10/50
R10 10K
C6 220 /6.3
D11
RD4.7ES-T1B2
CN1
1 AL 5V
2 S CLK
3 STB
4 S DATA
5 GND
6 RC IN
7 DC(-)
8 DC(+)
9 -28V
5.1
5.0
4.8
3.6
0
5.1
-23.4
-13.8
-28.2
TO SYSCON CN802 (Page 4-23)
IC2
GP1U581X
GND
VCC
V. OUT

4.20 FRONT CIRCUIT BOARD

MAIN CONPONENT PARTS LOCATION GUIDE

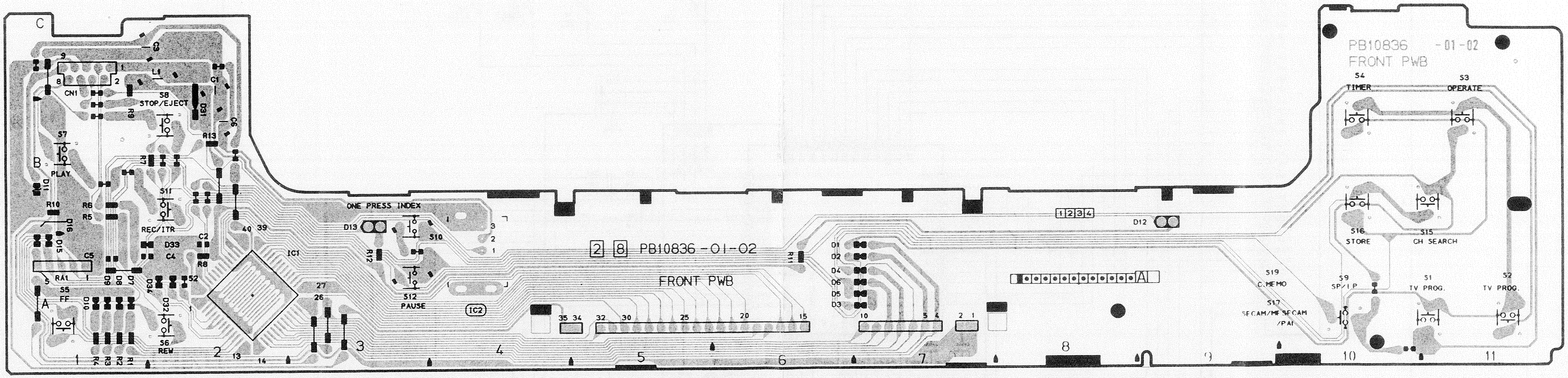
<FRONT PWB>

REF. No.	LOCATION
IC	
IC1	2A
IC2	4A

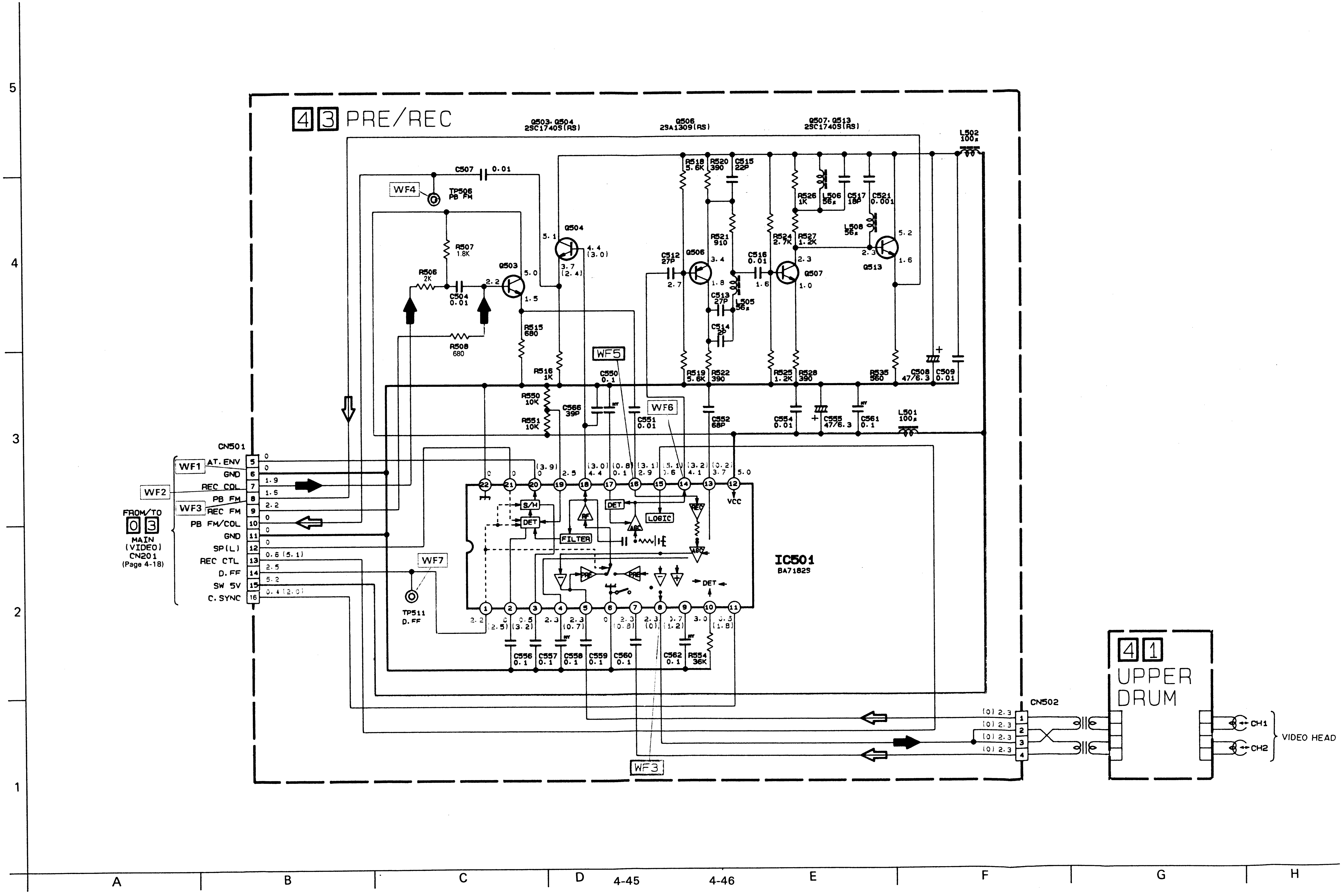
REF. No.	LOCATION
DIODE	
D1	7A
D2	7A
D3	7A
D4	7A
D5	7A
D7	1A
D9	1A

REF. No.	LOCATION
DIODE	
D10	1A
D11	1B
D12	9B
D13	3B
D15	1A
D32	2A

REF. No.	LOCATION
CONNECTOR	
CN1	1C

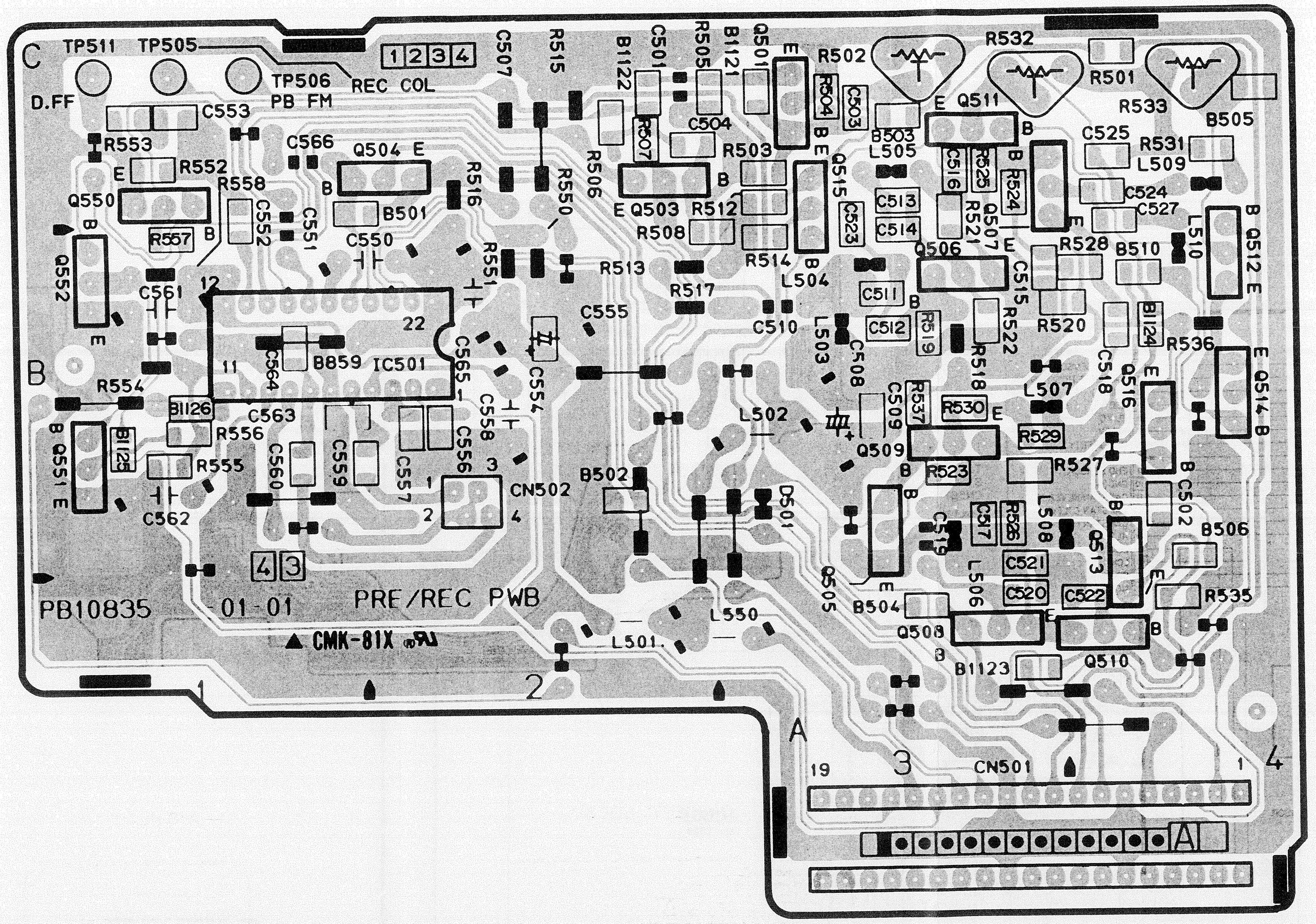

C
B
A
CN1
9
8
1
2
L1
C1
C3
S8
STOP/EJECT
R9
D31
C6
R13
S7
PLAY
D11
R7
S11
REC/ITR
R10
R6
R5
D16
D15
C5
RA1
5
1
D9
D8
D7
D33
C4
C2
R8
D34
S2
S5
FF
D10
D32
S6
REW
R4
R3
R2
R1
40
39
IC1
27
26
13
14
ONE PRESS INDEX
D13
R12
S10
S12
PAUSE
IC2
3
2
1
2 8 PB10836-01-02
FRONT PWB
R11
D1
D2
D4
D6
D5
D3
35
34
32
30
25
20
15
10
5
4
2
1
1234
D12
A
PB10836 -01-02
FRONT PWB
S4
TIMER
S3
OPERATE
S16
STORE
S15
CH SEARCH
S19
C.MEMO
S17
SECAM/MESECAM
/PAL
S9
SP/LP
S1
TV PROG.
S2
TV PROG.
1
2
3
4
5
6
7
8
9
10
11

4.21 PRE/REC SCHEMATIC DIAGRAM



43 PRE/REC
Q503, Q504 2SC1740S(RS)
Q506 2SA1309(RS)
Q507, Q513 2SC1740S(RS)
L502 100μ
C507 0.01
WF4
TP506 PB FM
R507 1.8K
Q503
Q504
R506 2K
C504 0.01
R508 680
R515 680
R516 1K
R550 10K
R551 10K
C566 39P
C550 0.1
C551 0.01
WF5
WF6
R518 5.6K
R520 390
C515 22P
R521 910
C512 27P
Q506
C513 27P
L505 56μ
C514 2P
R519 5.6K
R522 390
C552 68P
C516 0.01
Q507
R524 2.7K
R527 1.2K
R526 1K
L506 56μ
C517 18P
C521 0.001
L508 56μ
Q513
R525 1.2K
R528 390
R535 560
C508 47/6.3
C509 0.01
C554 0.01
C555 47/6.3
C561 0.1
L501 100μ
CN501
WF1
WF2
WF3
AT. ENV
GND
REC COL
PB FM
REC FM
PB FM/COL
GND
SP(L)
REC CTL
D. FF
SW 5V
C. SYNC
FROM/TO
03
MAIN (VIDEO) CN201 (Page 4-18)
WF7
TP511 D. FF
S/H
DET
FILTER
RF
AGC
LOGIC
REF
PRE
DET
VCC
IC501 BA7182S
C556 0.1
C557 0.1
C558 0.1
C559 0.1
C560 0.1
C562 0.1
R554 36K
WF3
CN502
(0) 2.3
41
UPPER DRUM
CH1
CH2
VIDEO HEAD
A
B
C
D
E
F
G
H
1
2
3
4
5

4.22 PRE/REC CIRCUIT BOARD


TP511
TP505
TP506
PB FM
REC COL
D.FF
1 2 3 4
C553
R553
R552
R558
C566
Q504
Q550
Q552
R557
C552
C551
B501
C550
C561
IC501
B859
C564
R554
B1126
C563
R556
R555
Q551
B1125
C562
C560
C559
C557
C556
C558
C565
CN502
PB10835 -01-01
PRE/REC PWB
CMK-81X
C507
R515
B1122
C501
R505
B1121
Q501
C504
R507
R503
R506
R550
R516
R551
Q503
R512
R508
R514
R513
R517
C555
C554
C510
B502
D501
L502
L503
L504
L550
L501
R502
R504
C503
R532
R501
R533
B503
L505
Q511
Q515
C513
C514
C523
C516
R525
R524
R521
Q507
Q506
C511
C512
R519
C508
C509
R537
R530
R518
R522
Q509
R523
C519
C517
R526
L506
Q505
B504
Q508
B1123
C521
C520
C522
Q510
L508
Q513
R529
R527
L507
C518
Q516
B1124
R520
C515
R528
B510
C525
R531
L509
C524
C527
B505
L510
Q512
R536
Q514
C502
B506
R535
CN501
A
B
C
1
2
3
4
19

LEADLESS COMPONENT PARTS LOCATION GUIDE
<PRE/REC PWB>

REF. No.	LOCATION
RESISTOR	
R501	4C
R503	3C
R504	3C
R505	2C
R507	2C
R508	2B
R512	3C
R514	3B
R519	3B
R520	4B
R521	3C
R522	3B
R523	3B
R524	3C
R525	3C
R526	3B
R527	3B
R528	4B
R529	3B
R530	3B
R531	4C
R535	4A
R537	3B
R552	1C
R553	1C
R555	1B
R556	1B
R557	1B

REF. No.	LOCATION
CAPACITOR	
C501	2C
C502	4B
C503	3C
C504	2C
C509	3B
C511	3B
C512	3B
C513	3C
C514	3B
C515	3B
C516	3C
C517	3B
C518	4B
C520	3A
C521	3B
C522	4A
C523	3B
C524	4C
C525	4C
C527	4C
C552	1C
C553	1C
C554	2B
C556	2B
C557	2B
C559	1B
C560	1B
C563	1B
C564	1B

MAIN CONPONENT PARTS LOCATION GUIDE
<PRE/REC PWB>

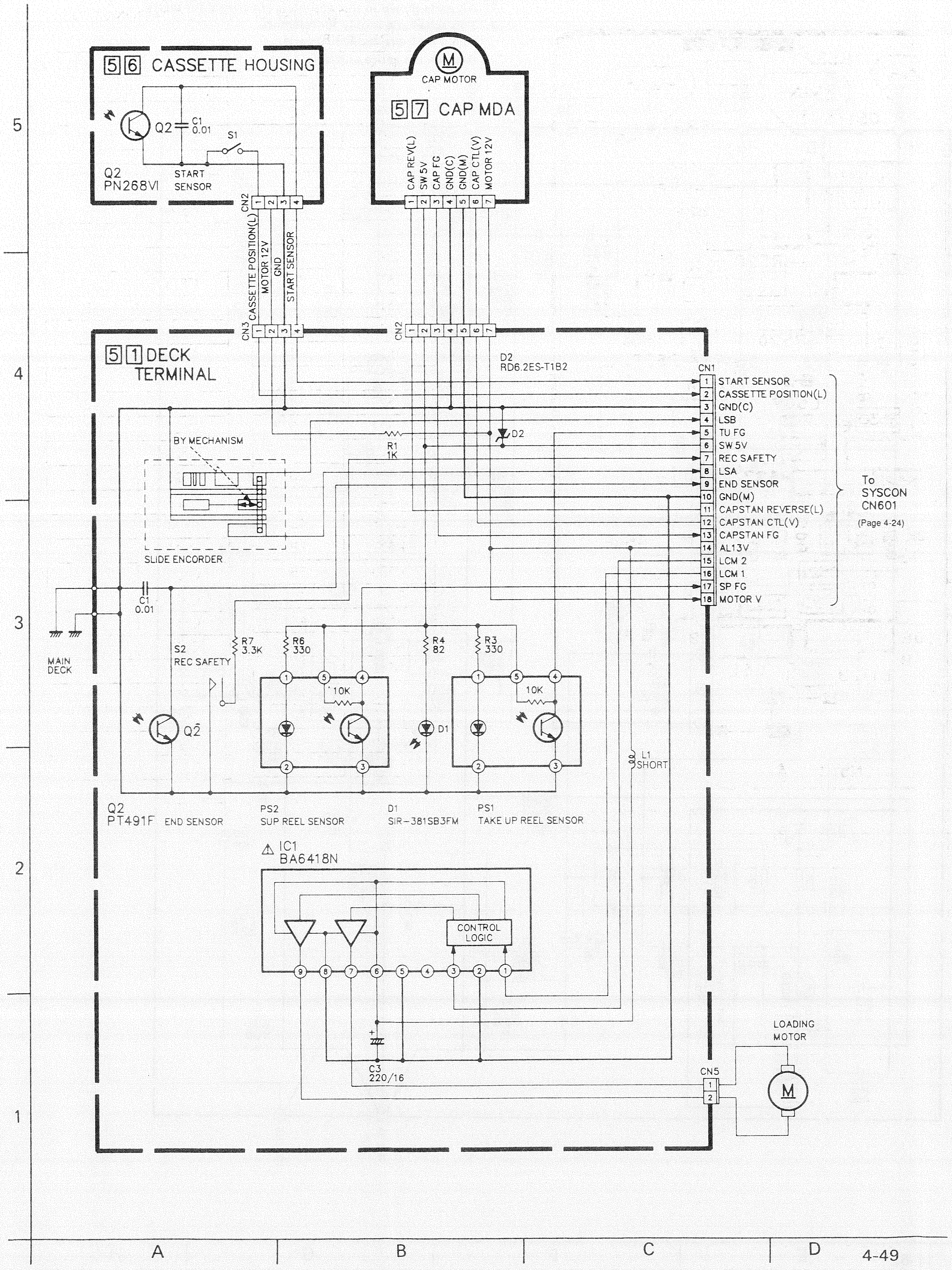
REF. No.	LOCATION
IC	
IC501	2B

REF. No.	LOCATION
TRANSISTOR	
Q503	2C
Q504	2C
Q506	3B
Q507	3C
Q513	4B

REF. No.	LOCATION
CONNECTOR	
CN501	3A
CN502	2B

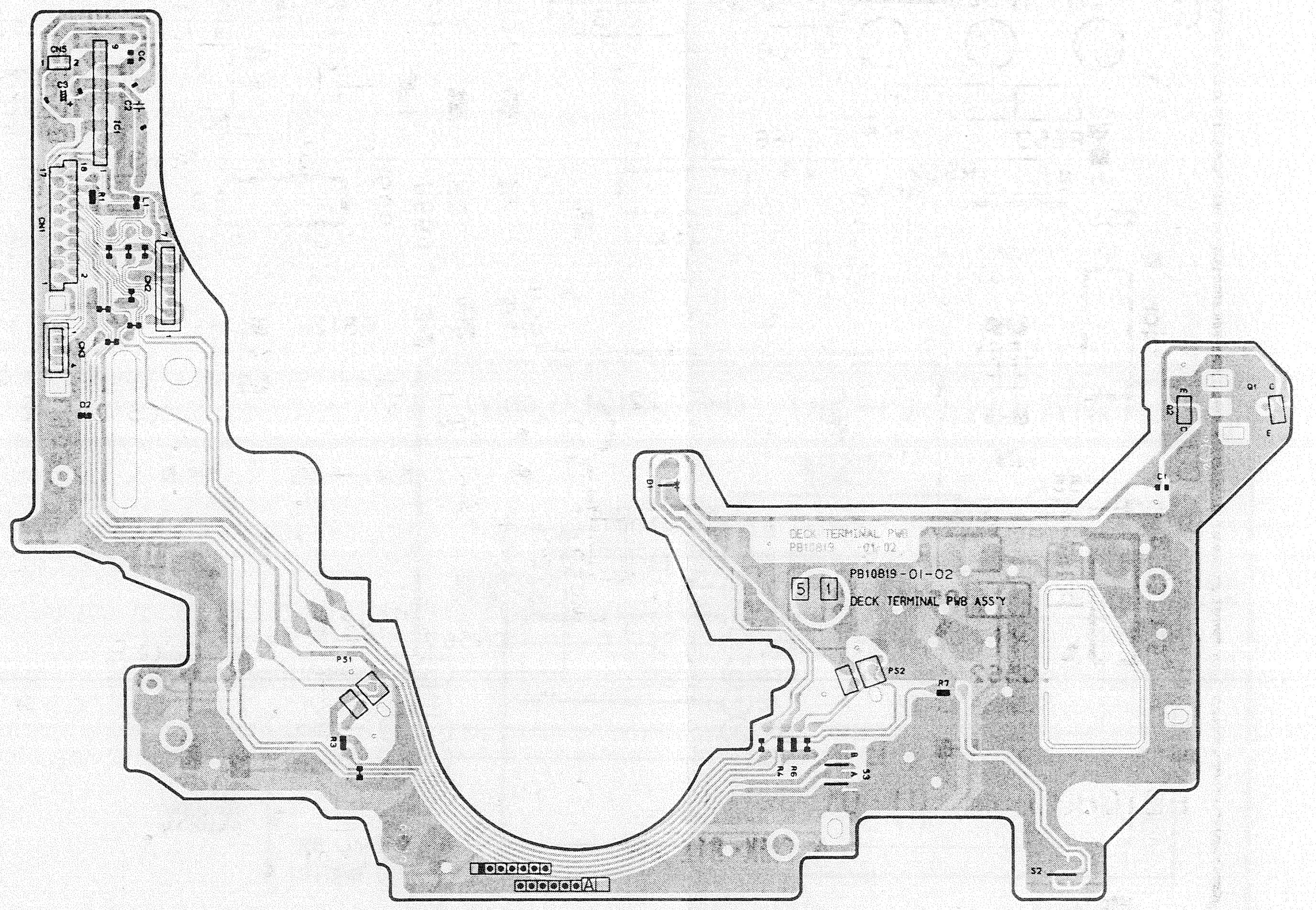
REF. No.	LOCATION
TEST POINT	
TP506	1C
TP511	1C

4.23 DECK TERMINAL, CASSETTE HOUSING AND CAPSTAN MDA SCHEMATIC DIAGRAMS

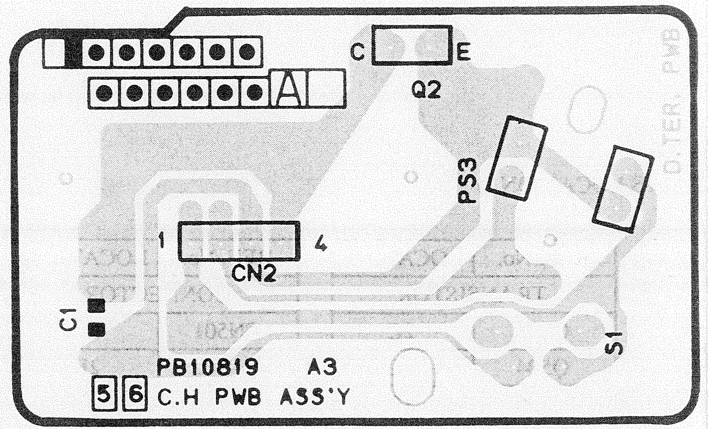

5 6 CASSETTE HOUSING
Q2
C1 0.01
S1
Q2 PN268VI
START SENSOR
CN2
CAP MOTOR
5 7 CAP MDA
CAP REV(L)
SW 5V
CAP FG
GND(C)
GND(M)
CAP CTL(V)
MOTOR 12V
CASSETTE POSITION(L)
MOTOR 12V
GND
START SENSOR
CN3
CN2
5 1 DECK TERMINAL
D2 RD6.2ES-T1B2
CN1
1 START SENSOR
2 CASSETTE POSITION(L)
3 GND(C)
4 LSB
5 TU FG
6 SW 5V
7 REC SAFETY
8 LSA
9 END SENSOR
10 GND(M)
11 CAPSTAN REVERSE(L)
12 CAPSTAN CTL(V)
13 CAPSTAN FG
14 AL13V
15 LCM 2
16 LCM 1
17 SP FG
18 MOTOR V
To SYSCON CN601
(Page 4-24)
BY MECHANISM
R1 1K
D2
SLIDE ENCORDER
C1 0.01
MAIN DECK
S2 REC SAFETY
R7 3.3K
R6 330
R4 82
R3 330
10K
10K
Q2
D1
L1 SHORT
Q2 PT491F END SENSOR
PS2 SUP REEL SENSOR
D1 SIR-381SB3FM
PS1 TAKE UP REEL SENSOR
⚠ IC1 BA6418N
CONTROL LOGIC
C3 220/16
LOADING MOTOR
CN5
M
5
4
3
2
1
A
B
C
D

4.24 DECK TERMINAL, CASSETTE HOUSING AND A/C HEAD CIRCUIT BOARDS

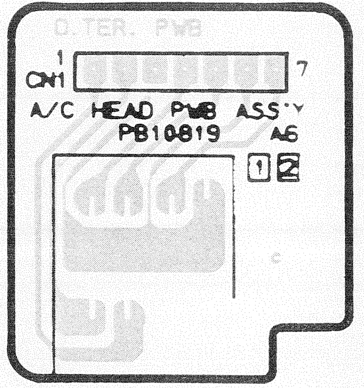
— DECK TERMINAL —


CN5
C3
C4
C2
IC1
CN1
R1
L1
CN2
CN3
D2
D1
PS1
R3
DECK TERMINAL PWB
PB10819 -01-02
PB10819 - 01 - 02
5 1 DECK TERMINAL PWB ASS'Y
PS2
R7
R4
R6
S3
Q1
C1
S2
A

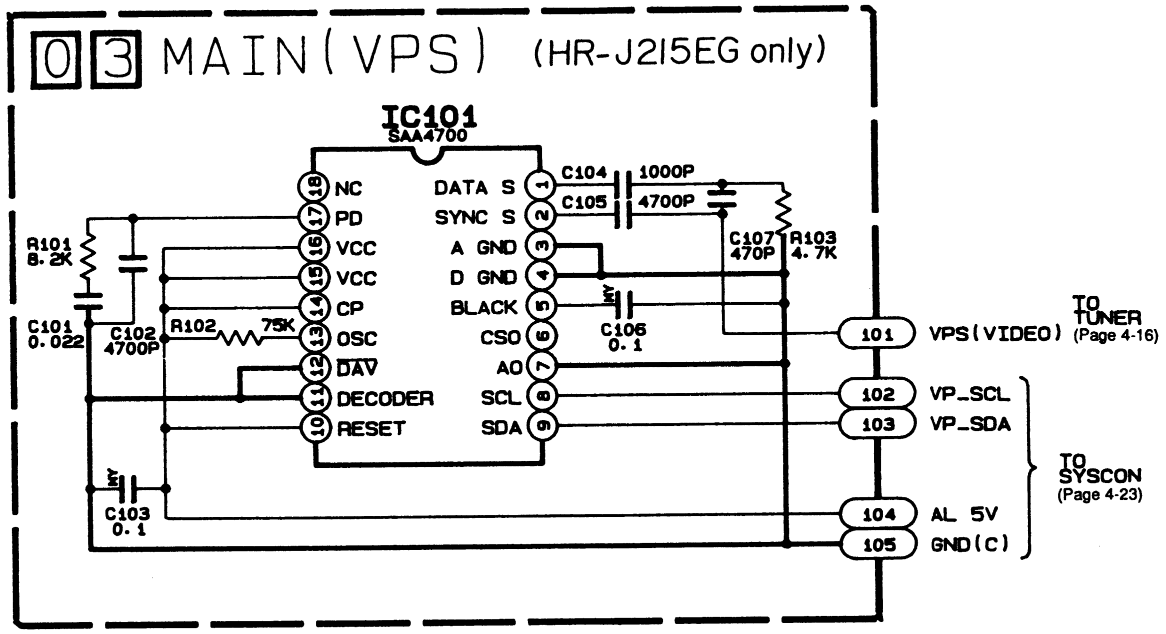
— CASSETTE HOUSING —


A
C
E
Q2
PS3
1
4
CN2
C1
S1
D.TER. PWB
PB10819 A3
5 6 C.H PWB ASS'Y

— A/C HEAD —


D.TER. PWB
1
CN1
7
A/C HEAD PWB ASS'Y
PB10819 A6
1 2

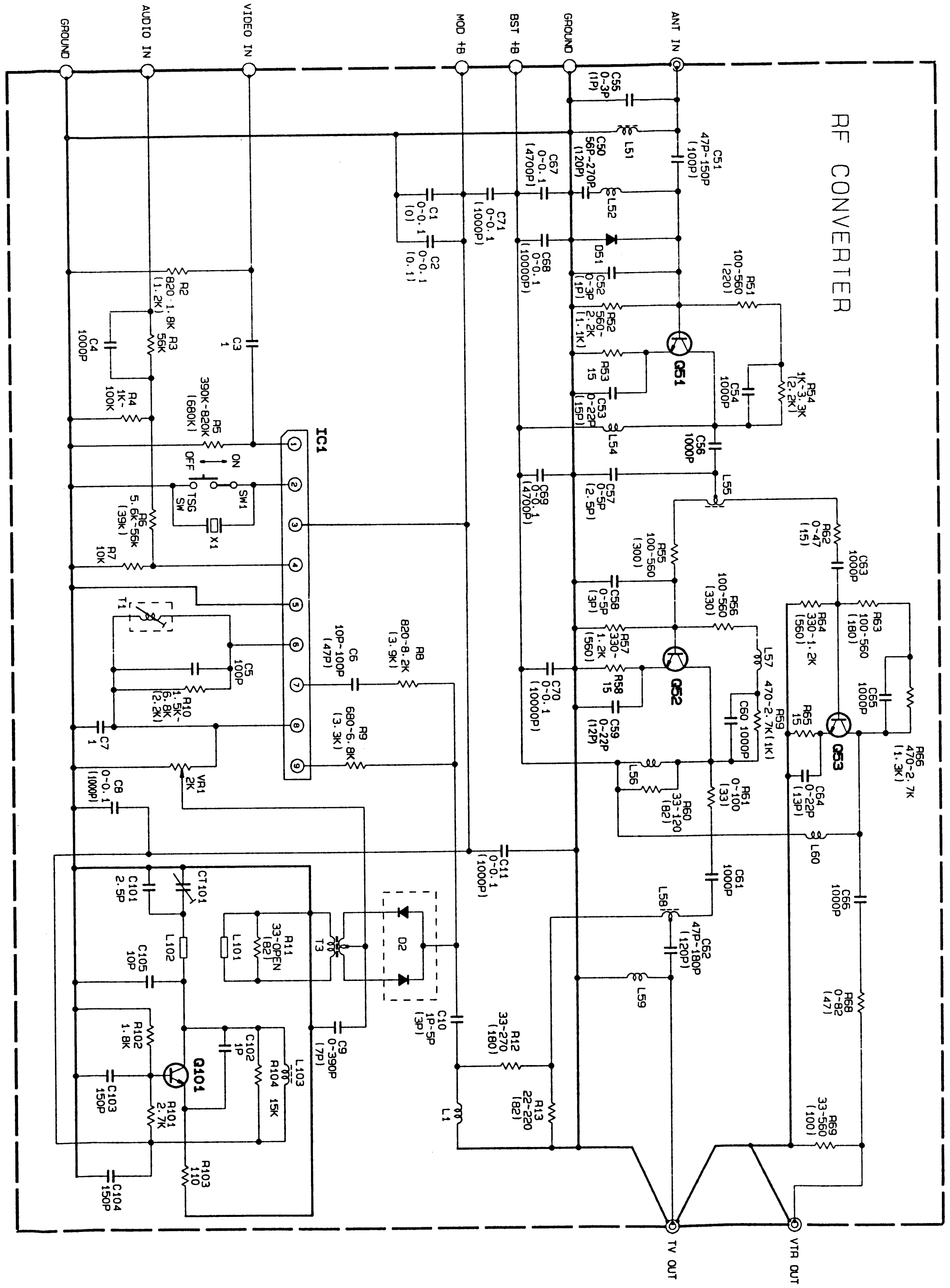
4.25 VPS SCHEMATIC DIAGRAM



03 MAIN(VPS) (HR-J215EG only)
IC101
SAA4700
NC
PD
VCC
VCC
CP
OSC
DAV
DECODER
RESET
DATA S
SYNC S
A GND
D GND
BLACK
CSO
AO
SCL
SDA
C104 1000P
C105 4700P
C107 470P
R103 4.7K
C106 0.1
R101 8.2K
C101 0.022
C102 4700P
R102 75K
C103 0.1
101 VPS(VIDEO)
TO TUNER (Page 4-16)
102 VP_SCL
103 VP_SDA
TO SYSCON (Page 4-23)
104 AL 5V
105 GND(C)

4.26 RF CONVERTER SCHEMATIC DIAGRAM

NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

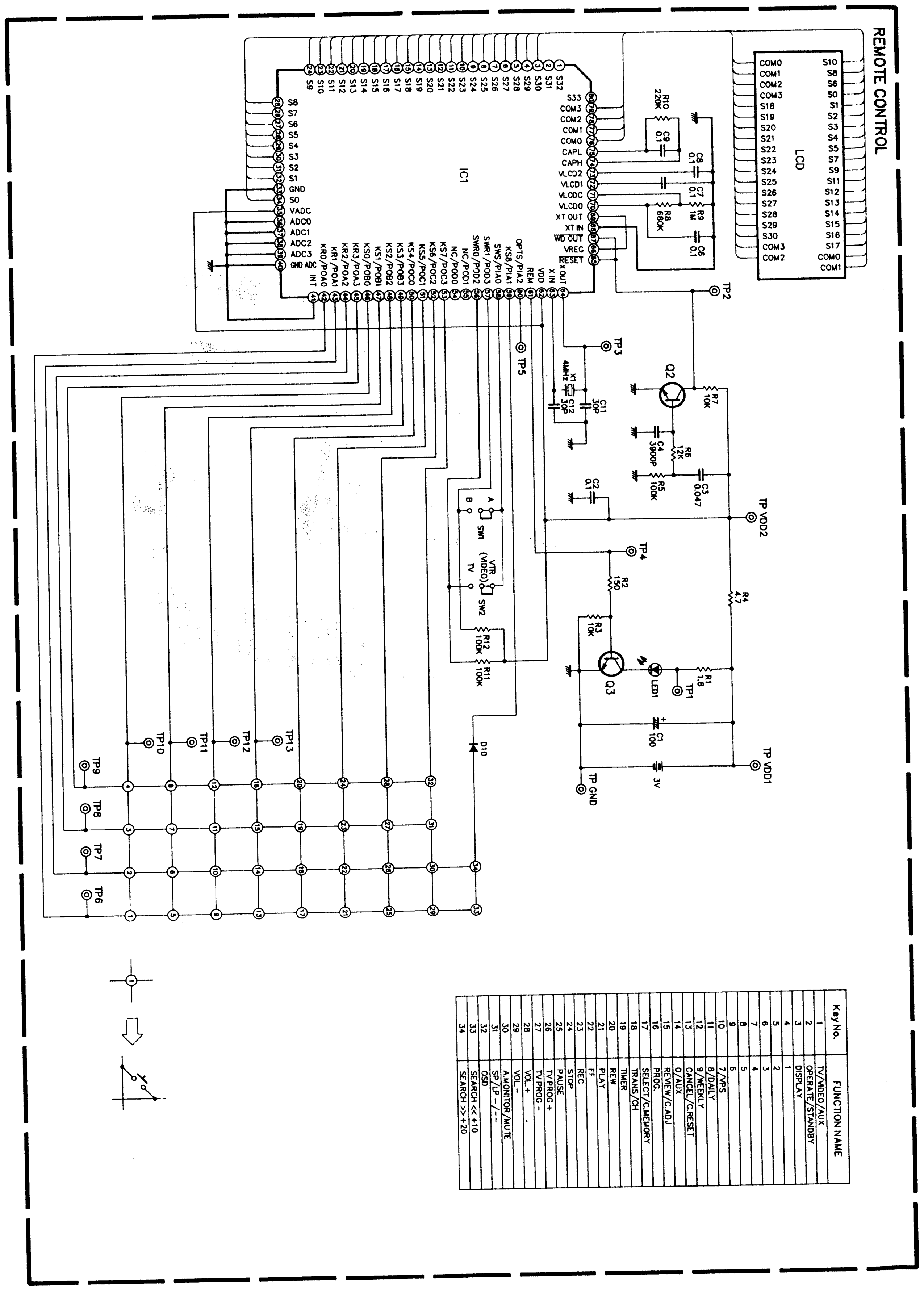


RF CONVERTER
GROUND
AUDIO IN
VIDEO IN
MOD 4B
BST 4B
GROUND
ANT IN
TV OUT
VTR OUT
IC1
SW1
ON
OFF
TSG SW
X1
T1
T3
D2
Q104
Q51
Q52
Q53
VR1 2K
CT101
L101
L102
L103
C101 2.5P
C105 10P
C103 150P
C104 150P
R102 1-8K
R101 2.7K
R103 110
R104 15K
C102 1P
R11 33-OPEN (82)
C9 0-390P (7P)
C10 1P-5P (3P)
C11 0-0.1 (1000P)
R12 33-270 (160)
R13 22-220 (82)
L1
R2 820-1.8K (1.2K)
R3 56K
C4 1000P
C3 1
R4 1K-100K
R5 390K-820K (680K)
R6 5.6K-56K (39K)
R7 10K
C5 100P
R10 1.5K-6.8K (2.2K)
C6 10P-100P (47P)
R8 820-8.2K (3.9K)
R9 680-6.8K (3.3K)
C7 1
C8 0-0.1 (1000P)
C1 0-0.1 (0)
C2 0-0.1 (0.1)
C71 0-0.1 (1000P)
C67 0-0.1 (4700P)
C68 0-0.1 (10000P)
C55 0-3P (1P)
L51
C50 56P-270P (120P)
C51 47P-150P (100P)
L52
D51
C52 0-3P (1P)
R52 560-2.2K (1.1K)
R51 100-560 (220)
R53 15
C53 0-22P (15P)
R54 1K-3.3K (2.2K)
C54 1000P
L54
C56 1000P
C69 0-0.1 (4700P)
C57 0-5P (2.5P)
L55
R55 100-560 (300)
C58 0-5P (3P)
R56 100-560 (330)
R57 330-1.2K (560)
R58 15
C59 0-22P (12P)
C70 0-0.1 (10000P)
L57
R59 470-2.7K (1K)
C60 1000P
L56
R60 33-120 (82)
R61 0-100 (33)
R62 0-47 (15)
C63 1000P
R64 330-1.2K (560)
R63 100-560 (180)
C65 1000P
R65 15
R66 470-2.7K (1.3K)
C64 0-22P (13P)
L60
C61 1000P
L58
C62 47P-180P (120P)
L59
C66 1000P
R68 0-82 (47)
R69 33-560 (100)

4.27 REMOTE CONTROL SCHEMATIC DIAGRAMS

–for HR-J210E–

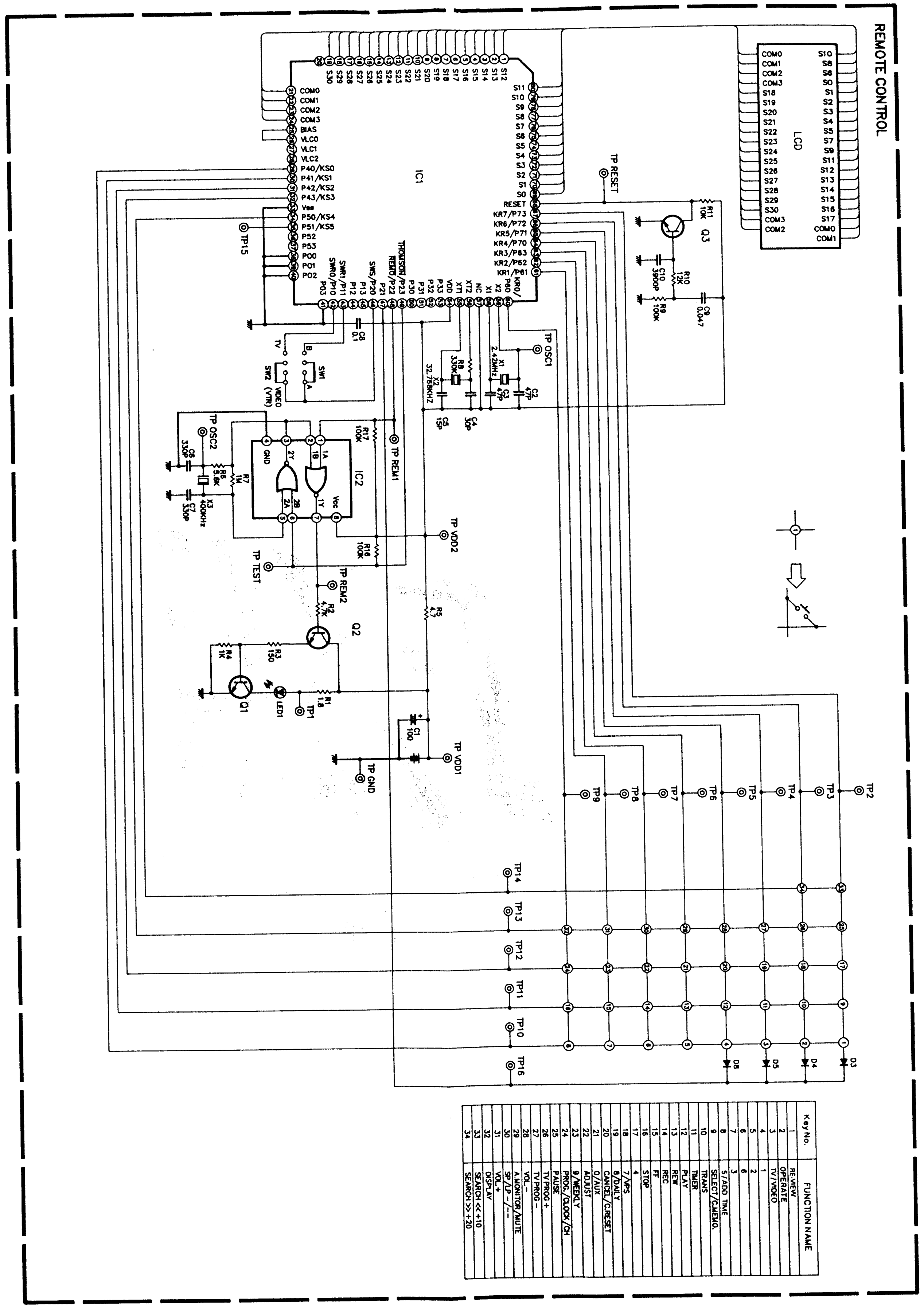
NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.


REMOTE CONTROL
IC1
LCD
Q2
Q3
LED1
X1 4MHz
SW1
SW2
VTR (VIDEO)
TV
D10
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP VDD1
TP VDD2
TP GND
3V

Key No.	FUNCTION NAME
1	TV/VIDEO/AUX
2	OPERATE/STANDBY
3	DISPLAY
4	1
5	2
6	3
7	4
8	5
9	6
10	7/VPS
11	8/DAILY
12	9/WEEKLY
13	CANCEL/C.RESET
14	0/AUX
15	REVIEW/C.ADJ
16	PROG.
17	SELECT/C.MEMORY
18	TRANS/CH
19	TIMER
20	REW
21	PLAY
22	FF
23	REC
24	STOP
25	PAUSE
26	TV PROG +
27	TV PROG –
28	VOL.+
29	VOL.–
30	A.MONITOR/MUTE
31	SP/LP –/– –
32	OSD
33	SEARCH << +10
34	SEARCH >> +20

–for HR-J215E/EG–

NOTE:
1. All parts shown in this schematic are critical for safety.
2. This schematic is only for reference.
Avoid replacing individual parts.
Replace the entire unit only.

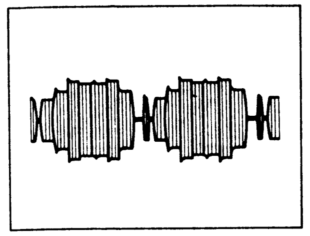

REMOTE CONTROL
IC1
IC2
LCD
Q1
Q2
Q3
LED1
X1 2.42MHz
X2 32.768kHz
X3 455kHz
SW1
SW2 (VTR)
VIDEO
TV
D3
D4
D5
D8
TP RESET
TP OSC1
TP OSC2
TP REM1
TP REM2
TP TEST
TP VDD1
TP VDD2
TP GND
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
TP16

Key No.	FUNCTION NAME
1	RE-VIEW
2	OPERATE
3	TV/VIDEO
4	1
5	2
6	6
7	3
8	5/ADD TIME
9	SELECT/C.MEMO.
10	TRANS
11	TIMER
12	PLAY
13	REW
14	REC
15	FF
16	STOP
17	4
18	7/VPS
19	8/DAILY
20	CANCEL/C.RESET
21	0/AUX
22	ADJUST
23	9/WEEKLY
24	PROG./CLOCK/CH
25	PAUSE
26	TV PROG +
27	TV PROG –
28	VOL –
29	A.MONITOR/MUTE
30	SP/LP –/– –
31	VOL +
32	DISPLAY
33	SEARCH << +10
34	SEARCH >> +20

4.28 WAVEFORMS

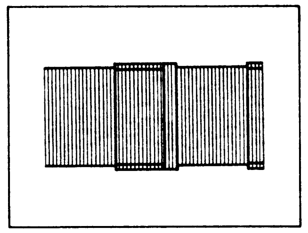
— VIDEO —

WF1 REC COLOR



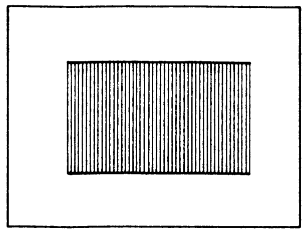
REC 0.23 Vp-p
5 mV/20µsec/DIV

WF2 PB FM



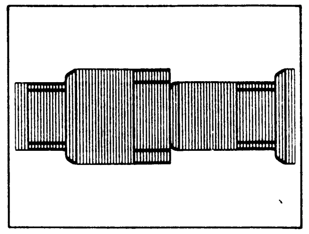
PB 0.42 Vp-p
10 mV/5 msec/DIV

WF3 REC FM



REC 0.65 Vp-p
20 mV/5 msec/DIV

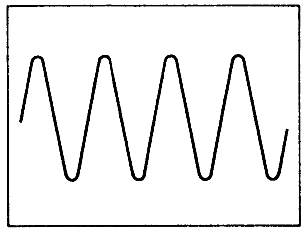
WF4 PB FM/COLOR



PB 0.4 Vp-p
10 mV/5 msec/DIV

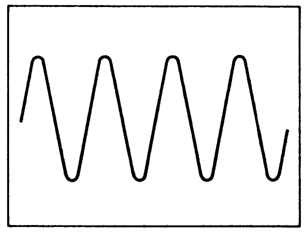
— AUDIO —

WF1 CN301-1



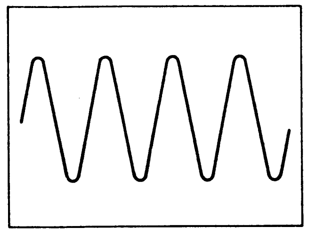
REC 44.0 Vp-p
1.0 V/10µsec/DIV

WF2 TP333 ERASE



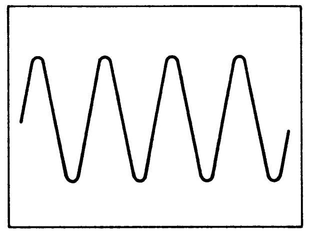
REC 36.0 Vp-p
1.0 V/10µsec/DIV

WF3 IC301-12



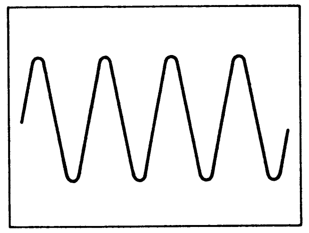
PB 2.2 Vp-p
0.1 V/2 msec/DIV

WF4 AUX IN



REC 0.2 Vp-p
10 mV/1 msec/DIV

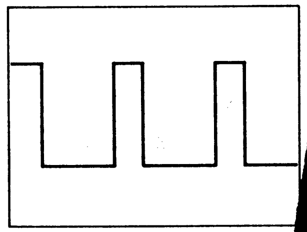
WF5 AUDIO OUT



REC/PB 2.4 Vp-p
0.1 V/1 msec/DIV

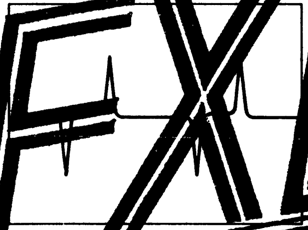
— SERVO —

WF1 IC401-29



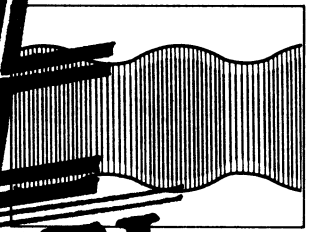
REC 6.0 Vp-p
0.1 V/10 msec/DIV

WF2 TP401 CTL [illegible]



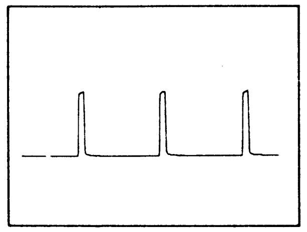
[illegible] Vp-p
5[illegible] msec/DIV

[illegible] CAP. FG



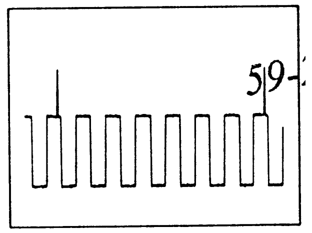
REC [illegible].0 Vp-p
[illegible] msec/DIV

WF4 C. SYNC



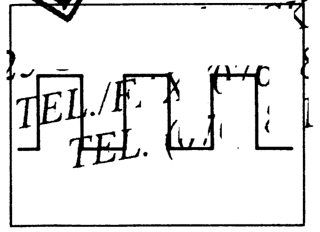
REC 4.2 Vp-p
0.1 V/20 µsec/DIV

WF5 D. PG/FG



REC/PB 4.2 Vp-p
0.1 V/5 msec/DIV

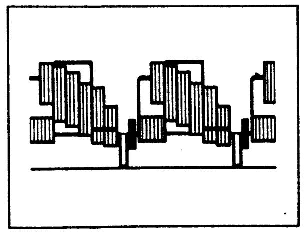
[illegible] D. FF



REC/PB 5.0 Vp-p
0.2 V/10 msec/DIV

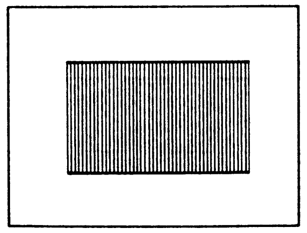
— VIDEO UNIT —

WF1 VIDEO OUT



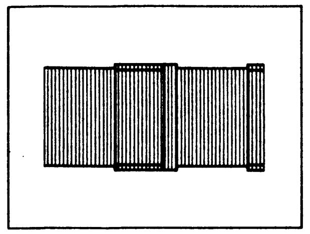
REC/PB 2.2 Vp-p
50 mV/20 µsec/DIV

WF2 REC FM



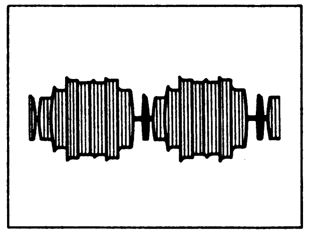
REC 0.68 Vp-p
20 mV/2 msec/DIV

WF3 PB FM



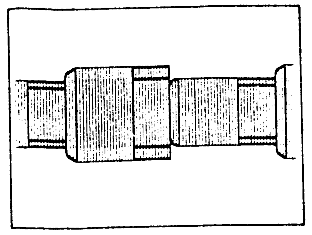
PB 0.44 Vp-p
10 mV/5 msec/DIV

WF4 REC COLOR



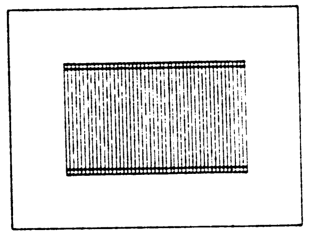
REC 0.22 Vp-p
5 mV/20 µsec/DIV

WF5 PB COLOR



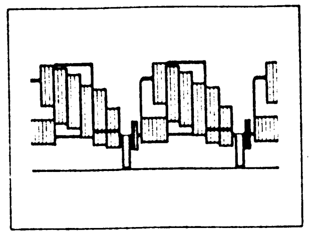
PB 0.36 Vp-p
10 mV/5 msec/DIV

WF6 REC FM



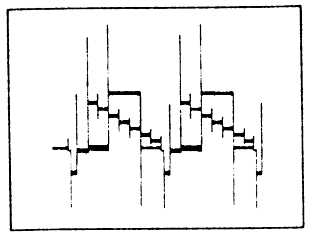
REC 1.3 Vp-p
50 mV/2 msec/DIV

WF7 IC2-14



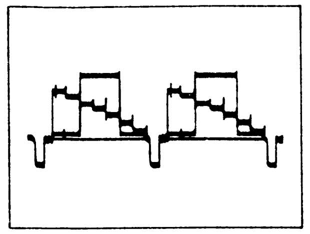
REC 1.1 Vp-p
20 mV/20 µsec/DIV

WF8 IC2-12



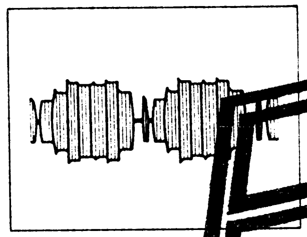
PB 0.32 Vp-p
10 mV/20 µsec/DIV

WF9 IC2-11



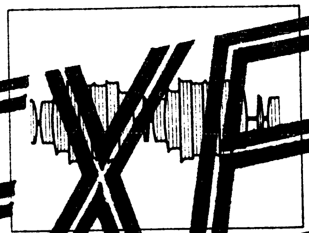
REC 0.52 Vp-p
20 mV/20 µsec/DIV

WF10 REC COLOR



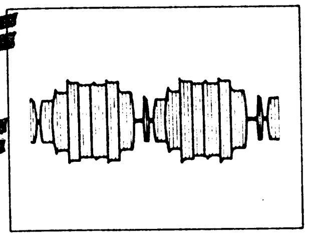
REC 0.4 Vp[illegible]
10 mV/20 µsec[illegible]

WF11 IC2-37



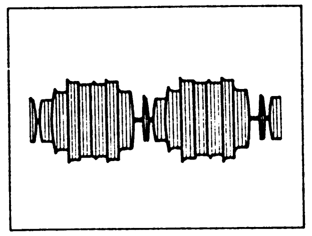
P[illegible] 8 V[illegible]
20 m[illegible] µ[illegible]

WF12 IC2-39



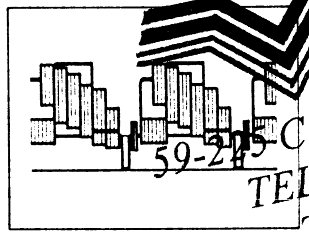
PB 0.8 Vp-p
20 mV/20 µsec/DIV

WF13 PB COLOR



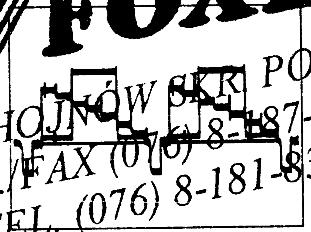
PB 0.08 Vp-p
5 mV/20 µsec/DIV

WF14 AUX IN



REC 1.1 Vp-p
20 mV/20 µsec/DIV

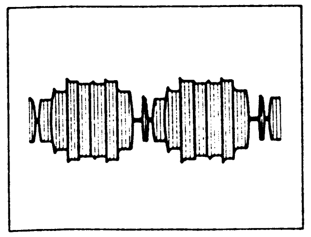
[illegible] IC[illegible]



REC 0.3 Vp-p/PB 0.38 Vp-p
10 mV/20 µsec/DIV

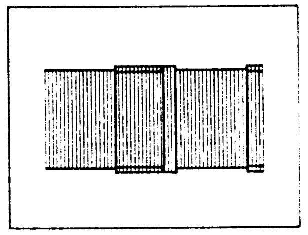
— PRE/REC —

WF1 REC COLOR



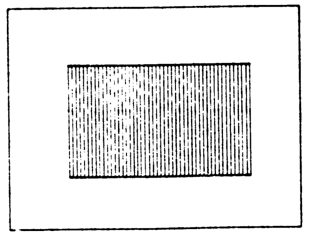
REC 0.23 Vp-p
5 mV/20 µsec/DIV

WF2 PB FM



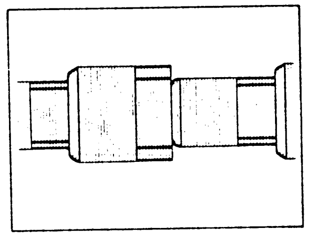
PB 0.42 Vp-p
10 mV/5 msec/DIV

WF3 REC FM



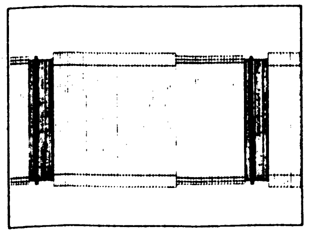
REC 0.65 Vp-p
20 mV/2 msec/DIV

WF4 TP506 PB FM/COLOR



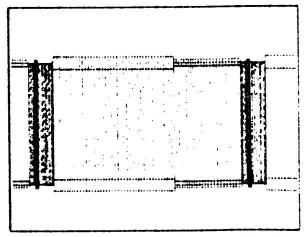
PB 0.4 Vp-p
10 mV/5 msec/DIV

WF5 REC FM/COLOR



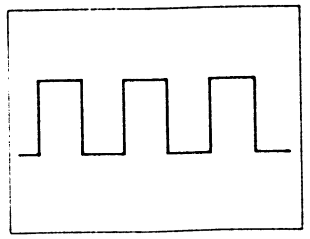
REC 0.3 Vp-p
10 mV/5 msec/DIV

WF6 PB FM



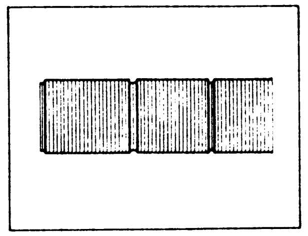
PB 0.34 Vp-p
10 mV/5 msec/DIV

WF7 TP511 D. FF



REC/PB 5.2 Vp-p
0.2 V/10 msec/DIV

WF8 SP COMMON



REC 1.6 Vp-p
50 mV/5 msec/DIV

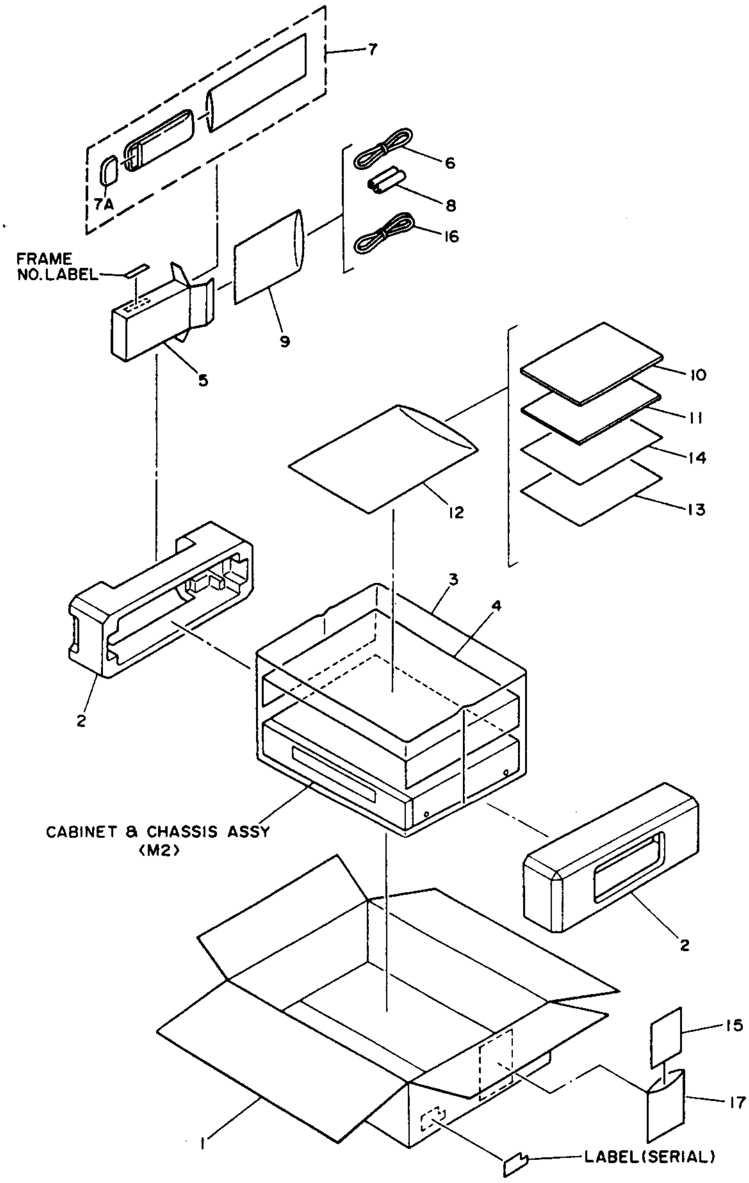
EXE FOXEL
59-2[illegible]5 CHOJN[illegible]ÓW SKR. POCZT. 19
TEL./FAX (0[illegible]6) 8-[illegible]87-882
TEL. (076) 8-181-839

SECTION 5
PARTS LIST

SAFETY PRECAUTION

Parts identified by the ⚠ symbol are critical for safety. Replace only with specified part numbers.

5.1 PACKING AND ACCESSORY ASSEMBLY <M1>



****

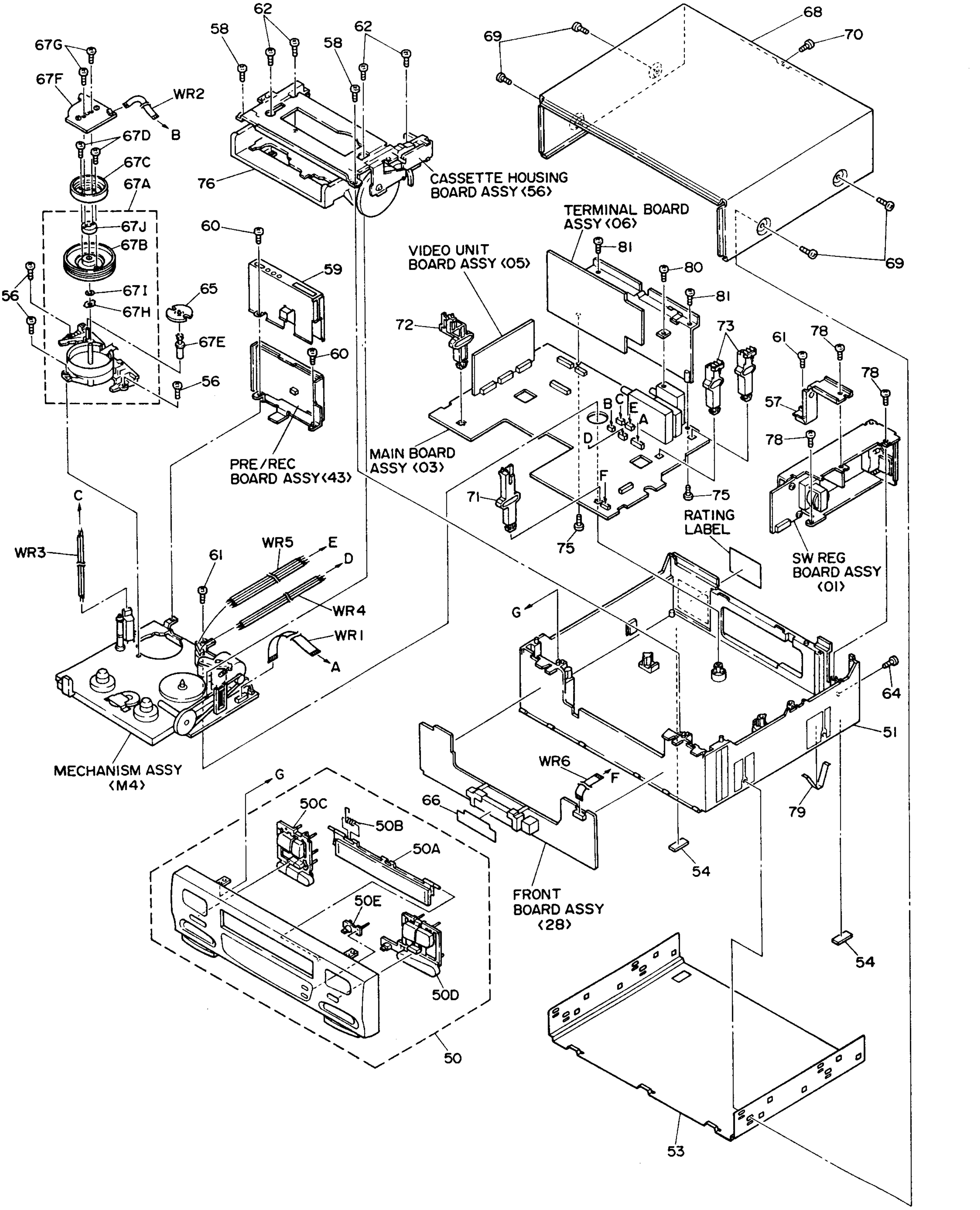
PACKING AND ACCESSORY ASSEMBLY <M1>

#⚠	REF No.	PART No.	PART NAME, DESCRIPTION
	1	PQ35075	PACKING CASE,HR-J215E
		PQ35075-9	PACKING CASE,HR-J215EG
		PQ35075-3	PACKING CASE,HR-J210E
	2	PQ34933A-1	CUSHION ASSEMBLY
	3	PQM30021-88	POLY BAG
	4	PQ41026-37	PROTECT SHEET
	5	PQ34715-3	CASE,ACCESSORY
⚠	6	PEAC0300-02	RF CABLE,HR-J215EG
		PU59167-7	RF CABLE,HR-J210E HR-J215E
⚠	7	PQ11534M	REMOTE CONTROLLER,HR-J215E
⚠		PQ11534P	REMOTE CONTROLLER,HR-J215EG
⚠		PQ11534N	REMOTE CONTROLLER,HR-J210E
	7A	PQ46063-2	CAP(BATTERY)
	8	R6PRPA-2ST	BATTERY,X2
	9	QPGA020-02005	POLY BAG
⚠	10	PU30425-1464	INSTRUCTIONS,HR-J215E
⚠		PU30425-1472	INSTRUCTIONS,HR-J210E
⚠		PU30425-1480	INSTRUCTIONS,HR-J215EG
	11	PU30425-1473	INSTRUCTIONS,HR-J210E
		PU30425-1465	INSTRUCTIONS,HR-J215E
	12	QPGA025-03505	POLY BAG
	13	PQ45146-38	SHEET(SPAIN),HR-J210E/HR-J215
	14	PQ34978-10	SHEET(S.V.),HR-J215E
		PQ34978-9	SHEET(S.V.),HR-J215EG
	15	BT-20135	WARRANTY CARD,HR-J215EG
⚠	16	QMP40E0-183	POWER CORD
	17	PQ33909	POLY BAG,HR-J215EG

5.2 CABINET AND CHASSIS ASSEMBLY <M2>

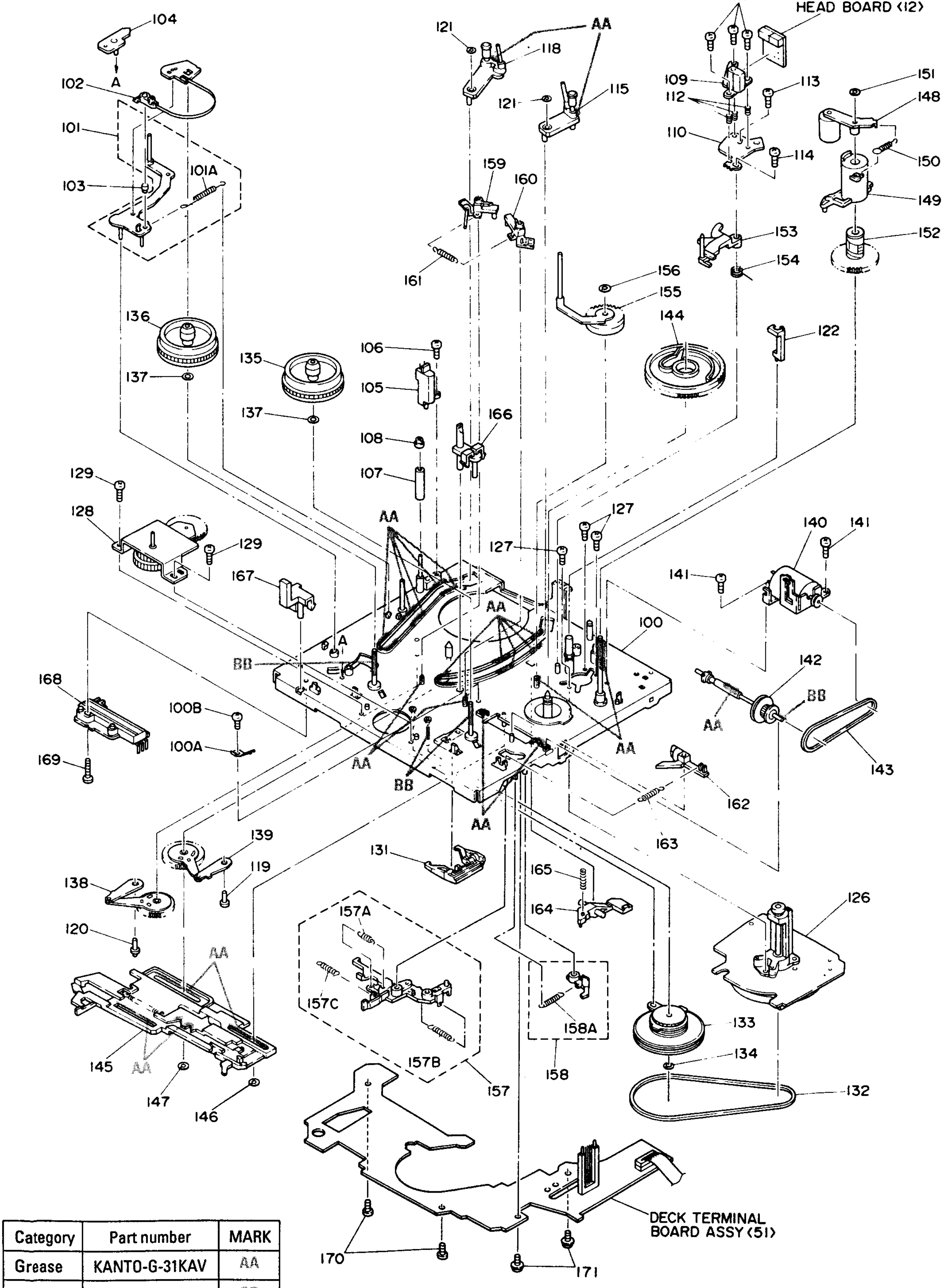
BEWARE OF BOGUS PARTS

Parts that do not meet specifications may cause trouble in regard to safety and performance. We recommend that genuine JVC parts be used.



67G
67F
WR2
B
67D
67C
67A
67J
67B
67I
67H
56
65
67E
56
58
62
58
62
76
CASSETTE HOUSING BOARD ASSY <56>
60
59
60
PRE/REC BOARD ASSY <43>
68
69
70
69
TERMINAL BOARD ASSY <06>
81
80
81
VIDEO UNIT BOARD ASSY <05>
72
73
61
78
78
57
78
B
C
E
A
D
MAIN BOARD ASSY <03>
F
71
75
75
RATING LABEL
SW REG BOARD ASSY <01>
C
WR3
61
WR5
E
D
WR4
WR1
A
G
64
51
MECHANISM ASSY <M4>
G
WR6
F
66
79
50C
50B
50A
54
50E
FRONT BOARD ASSY <28>
54
50D
50
53

5.3 MECHANISM ASSEMBLY <M4>


104
A
102
101
103
101A
121
AA
118
115
121
111
AUDIO/CONTROL HEAD BOARD <12>
109
113
112
110
114
151
148
150
149
152
159
160
161
153
154
156
155
144
122
136
137
135
137
106
105
108
107
166
129
128
129
127
127
AA
140
141
141
167
AA
100
A
BB
168
100B
100A
169
142
BB
AA
143
AA
AA
BB
AA
162
163
139
131
119
138
165
126
157A
164
120
AA
157C
158A
133
134
145
AA
157B
157
158
147
146
132
DECK TERMINAL BOARD ASSY <51>
170
171

Category	Part number	MARK
Grease	KANTO-G-31KAV	AA
Oil	COSMO-HV56	BB

NOTE: The section marked in AA and BB indicate lubrication and greasing areas.

****

CABINET AND CHASSIS ASSEMBLY <M2>

#△	REF No.	PART No.	PART NAME, DESCRIPTION
△	50	PQ11612D-2	FRONT PANEL ASSEMBLY,HR-J215EG
△		PQ11612C-2	FRONT PANEL ASSEMBLY,HR-J210E
△		PQ11612B-2	FRONT PANEL ASSEMBLY,HR-J215E
	50A	PQ21633-2	CASSETTE DOOR
	50B	PQ45704	TORSION SPRING
	50C	PQ11652-2	BUTTON(1)
	50D	PQ11653	BUTTON(2)
	50E	PQ34907	BUTTON(3)
△	51	PQ11622-1-7	BOTTOM CHASSIS
△	53	PQ11625	BOTTOM COVER
	54	PQ43013-5	FOOT,X2
	56	SPST2610Z	SCREW,X3 DRUM
	57	PQ35010	BRACKET(M.DECK)
	58	SDSF3010Z	SCREW,X2 CASSETTE HOUSING
	59	PQ21513-1-1	S.CASE(PRE.)
	60	SDSG2606Z	SCREW,X2 PRE
	61	PQ43831	SPECIAL SCREW,X2 MECHA
	62	SPST2608Z	SCREW,X4 CASSETTE HOUSING
	64	SDSB3008M	SCREW,INLET
	65	PQ45160	INERTIA PLATE
	66	PQ46283	FILTER(FDP)
	67A	PDM2232X	DRUM SUB ASSEMBLY
	67B	PDM3353D	UPPER DRUM ASSEMBLY
	67C	PDZ0141-2	ROTOR ASSEMBLY
	67D	SPSH2660Z	SCREW,X2
	67E	PDM4311A-1	ROLLER ASSEMBLY
△	67F	PDZ0141	STATOR ASSEMBLY
	67G	SPSP2606Z	SCREW,X2
	67H	PDM4343A	BRUSH ASSEMBLY
	67I	PDM4050-9	WASHER
	67J	PDM4345A	COLLAR ASSEMBLY
△	68	PQ11623	TOP COVER
	69	PQ43827	SPECIAL SCREW,X4 TOP COVER
	70	SDSF3008M	SCREW,TOP COVER
	71	PEME0938	HOLDER (PWB),CASSETTE HOUSING
	72	PEME0942	HOLDER (MAIN),CASSETTE HOUSIN
	73	PEME0943-01-01	HOLDER (REG.),X2
	75	SDSF3008Z	SCREW,X2 TERMINAL BOARD ASSY
	76	PUS29672C	CASSETTE HOUSING ASSY
	78	SDSF3008Z	SCREW,X3 P.SUPPLY BOARD ASSY
	79	PQ34737	EARTH PLATE,POWER SUPPLY
	80	SDST2605Z	SCREW,RF CONVERTOR
	81	SDSF3008Z	SCREW,X2 TERMINAL BOARD
	WR1	PW30802-1826	FFC WIRE,D/T
	WR2	PW30803-0422	FFC WIRE,DRUM
	WR3	PW30701-30AAYY	WIRE,FE
	WR4	PW30702-12AAYY	WIRE,CTL
	WR5	PW30705-12AAYY	WIRE,AUDIO
	WR6	PW30802-0913	FFC WIRE,M.CN802

****

MECHANISM ASSEMBLY <M4>

#△	REF No.	PART No.	PART NAME, DESCRIPTION
	100	PQ20650K	MAIN DECK ASSEMBLY
	100A	PQ43849	EARTH PLATE
	100B	SPST2604Z	SCREW
	101	PQ43497K	TENSION ARM ASSY
	101A	PQ43500	TENSION SPRING
	102	PQ45023A-1	TENSION BAND ASSY
	103	PQ43503-1-4	ADJUST PIN
	104	PQ44246	TENSION BAND BRACKET-3
	105	PEHE0237	FULL ERASE HEAD
	106	SDSF2614Z	SCREW,FULL ERASE HEAD
	107	PQ43505-1-1	ROLLER
	108	PQ43506	GUIDE POLE CAP
	109	PEHE0182	AUDIO CONTROL HEAD
	110	PQ43509	HEAD BASE
	111	PQ43687A	SPECIAL SCREW,X3
	112	PQM30002-192	COMPRESSION SPRING,X3
	113	SPSF2608M	SCREW
	114	SPSP2606Z	SCREW
	115	PU61103-2-7	POLE BASE ASSY(TAKE UP)
	118	PU61151-2-6	POLE BASE ASSY(SUPPLY)
	119	PQ45895	STOPPER(T)
	120	PQ45894	STOPPER(S)
	121	PQM30017-41	SLIT WASHER,X2
	122	PQ43675-1-5	TAPE GUARD
△	126	PU61285	CAPSTAN MOTOR
	127	SPSG2608Z	SCREW,X3
	128	PU60618-1-3	IDLER GEAR UNIT
	129	SPST2606Z	SCREW,X2
	131	PQ43532B-4	CHANGE LEVER ASSEMBLY
	132	PQM30003-24	TIMER BELT
	133	PU60953-1-6	CLUTCH UNIT
	134	PQM30017-8	SLIT WASHER
	135	PQ46072A	REEL DISK ASSY (TAKE-UP)
	136	PU60859-1-4	REEL DISK (SUPPLY)
	137	PQM30018-54	SPACER,X2
	138	PQ43537B	LOADING ARM ASSY (SUPLLY)
	139	PQ43542D-4	LOADING ARM AY (TAKE-UP)
△	140	PQ43676B-5	LOADING MOTOR ASSY
	141	SPST2606Z	SCREW,X2
	142	PQ43548A-2	WORM CLUTCH ASSY
	143	PQM30003-23	BELT
	144	PQ32413-1-6	CONTROL CAM
	145	PQ43555C-10	PLATE ASSY
	146	PQM30017-12	SLIT WASHER
	147	PQM30017-8	SLIT WASHER
	148	PQ43523C	PINCH ROLLER LEVER ASSY
	149	PQ32415	PINCH ROLLER PRESS LEVER
	150	PQM30001-233	TENSION SPRING
	151	PQM30017-13	SLIT WASHER
	152	PQ32416-2	PINCH ROLLER CAM
	153	PQ43567A-13	GUIDE ARM ASSY
	154	PQ43569-1-3	TORSION SPRING
	155	PQ45073B	HALF LOADING GEAR ASSY
	156	PQM30017-13	SLIT WASHER
	157	PQ43575A-5	CANCELL LEVER ASSY
	157A	PQM30001-273	TENSION SPRING
	157B	PQM30001-237	TENSION SPRING
	157C	PQM30001-274	TENSION SPRING
	158	PQ43578A-2	HOOK ASSY
	158A	PQM30001-238	TENSION SPRING
	159	PQ43581E	MAIN BRAKE ASSY(SUPPLY)
	160	PQ43582D	MAIN BRAKE ASSY(TAKE UP)
	161	PQM30001-251	TENSION SPRING
	162	PQ43583A-3	SUB BRAKE ASSY (TAKE UP)
	163	PQM30001-235	TENSION SPRING
	164	PQ43584A-5	CAPSTAN BRAKE ASSY
	165	PQM30002-201	COMPRESSION SPRING
	166	PQ21546	LED PRISM
	167	PU61281	REC SAFETY SWITCH
	168	PU60622-1-2	SLIDE SWITCH
	169	SDSF2614Z	SCREW
	170	SDST2616Z	SCREW,X2
	171	GPSF2608Z	SCREW,X2

5.4 ELECTRICAL PARTS LIST

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SW.REG BOARD ASSEMBLY <01>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB20651A-01	SWITCH REG BOARD ASSY,HR-J210E J215E	
		PB20651B-01	SWITCH REG BOARD ASSY,HR-J215EG	
	Q1	2SC4517A-LF619	TRANSISTOR	
	Q2	2SC3616(MLK)	TRANSISTOR	
	Q31	2SC1740S(RS)	TRANSISTOR	
	D1	10E6-F2	DIODE	
	D2	10E6-F2	DIODE	
	D3	10E6-F2	DIODE	
	D4	10E6-F2	DIODE	
	D6	1SS133	DIODE	
	D7	UZ27BSB	ZENER DIODE	
	D8	1SS133	DIODE	
	D9	AU01	FR DIODE	
	D10	AU01	FR DIODE	
	D31	AU01Z	FR DIODE	
	D32	RL2Z-LFB2	FR DIODE	
	D33	RL2Z-LFB2	FR DIODE	
	D35	AU01Z	FR DIODE	
	D36	RK14LF-B2	BARRIER DIODE	
	D37	AU01Z	FR DIODE	
	D38	1SS133	DIODE	
	D40	RD15ES-T1B1	ZENER DIODE	
	D41	RD6.2ES-T1B3	ZENER DIODE	
	D42	RD30ES-T1B1	ZENER DIODE	
	D43	1SS133	DIODE	
	R4	QRD161J-224	RESISTOR	220kΩ,1/6W
	R5	QRD161J-224	RESISTOR	220kΩ,1/6W
	R8	QRX014J-R39Z	MF RESISTOR	0.39Ω,1W
	R9	QRG029J-683G	OMF RESISTOR	68kΩ,2W
	R10	QRG029J-331A	OMF RESISTOR	330Ω,2W
	R11	QRD161J-122	RESISTOR	1.2kΩ,1/6W
	R14	QRD161J-681	RESISTOR	680Ω,1/6W
	R15	QRD161J-683	RESISTOR	68kΩ,1/6W
	R31	QRX014J-1R8Z	MF RESISTOR	1.8Ω,1W
△	R32	QRZ0077-470	FUSIBLE RESISTOR,HR-J210E J215E	47Ω,1/4W
△		QRZ0077-470X	FUSIBLE RESISTOR,HR-J215EG	47Ω,1/4W
△	R33	QRG02DJ-222	OMF RESISTOR,HR-J210E,J215E	2.2kΩ,2W
△		QRG02DJ-222X	OMF RESISTOR,HR-J215EG	2.2kΩ,2W
	R34	QRV144F-4870AY	CMF RESISTOR	487Ω,1/4W
	R35	QRD161J-471	RESISTOR	470Ω,1/6W
	R36	QRV144F-3740AY	CMF RESISTOR	374Ω,1/4W
	R37	QRD161J-122	RESISTOR	1.2kΩ,1/6W
△	C1	QFZ9037-333	F CAPACITOR,HR-J215EG	0.033μF
△	C2	QFZ9022-683	F CAPACITOR,HR-J210E J215E	0.068μF
△		QFZ9037-333	F CAPACITOR,HR-J215EG	0.033μF
△	C3	QFZ9022-333	F CAPACITOR,HR-J210E J215E	0.033μF
△	C4	QCZ9016-221K	CAPACITOR	220pF
△	C5	QCZ9016-221K	CAPACITOR	220pF
△	C9	QCZ9026-222	CAPACITOR	0.0022μF
	C10	PECA0793-686	E CAPACITOR	68μF,400V
	C12	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C13	QCZ0212-472	CAPACITOR	0.0047μF,1kV
	C16	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50V
	C20	QCZ0136-101Z	CAPACITOR	100pF,1kV
	C21	QFV11HJ-104AZ	F CAPACITOR	0.1μF,50V
	C31	QETC1JM-226	E CAPACITOR	22μF,63V
	C32	QEGB1CM-477	E CAPACITOR	470μF,16V
	C33	QEGB1AM-477	E CAPACITOR	470μF,10V
	C34	QETC1HM-226	E CAPACITOR	22μF,50
	C35	QEGB1AM-107	E CAPACITOR	100μF,10
	C36	QETB1AM-477	E CAPACITOR	470μF,10
	C37	QETB1EM-227	E CAPACITOR	220μF,25
	C38	QETC1HM-474	E CAPACITOR	0.47μF,50
	C39	QFLA1HJ-103Z	F CAPACITOR	0.01μF,50
	C40	QEGB1EM-227	E CAPACITOR	220μF,25
	C42	QETB1CM-477	E CAPACITOR	470μF,16
	L31	PELN0687	COIL	
	L32	PELN0687	COIL	
	L33	PELN0687	COIL	
△	PC1	PC120FY9	PH COUPLER,HR-J215EG	
△		PS2561L-1(WL)	PH COUPLER,HR-J210E J215E	
△	T1	PELN0987	SW TRANS	
△	AO1	PEMC1067	AC INLET	
△	BKT1	PQ21649-1-4	TRANS BRACKET	
△	FC1	PEMC0965	FUSE CLIP,F1 HR-J210E J215E	
△		PEMC0965-Z	FUSE CLIP,F1 HR-J215EG	
△	FC2	PEMC0965	FUSE CLIP,F1 HR-J210E J215E	
△		PEMC0965-Z	FUSE CLIP,F1 HR-J215EG	
	HS1	PQ45788-1-1	HEAT SINK,Q1	
△	LF1	PELN0885	LINE FILTER,HR-J215EG	
△	LF2	PELN0876	LINE FILTER	
	SCW1	SDST3006Z	SCREW,X3 B0ARD-BKT	
	SCW2	SDSB3008M	SCREW,INLET-BKT	
	SCW3	SDST3006Z	SCREW,Q1	
	CN1	PEMC0978-111	B TO B CONNECTOR,(1-11) MAIN	
△	CP1	ICP-N20	CIRCUIT PROTECTOR	
△	F1	QMF51E2-1R25	FUSE	T1.2

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MAIN BOARD ASSEMBLY <03>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10835C1	MAIN BOARD ASSEMBLY,HR-J215EG	
		PB10835B1-01	MAIN BOARD ASSEMBLY,HR-J210E J215E	
	JA703	PEMC1066	CONNECTOR,VPS/PDC HR-J210E J215E	
	CN201	PEMC1055-012	CONNECTOR,(5-16)PRE/REC	
	CN301	PU60910-4	CONNECTOR,(1-4) A/C HEAD	
	CN302	PU60910-2	CONNECTOR,(1-2) A/C HEAD	
	CN401	PU60910-3	CONNECTOR,(1-3) CTL HEAD	
	CN402	PEMC0915-004	FFC CONNECTOR,(1-4) DRUM MOTO	
	CN601	PEMC0915-018	FFC CONNECTOR,(1-18) DECK TERMINAL	
	CN712	PEMC0969-115	B TO B CONNECTOR,(1-15)TERMINAL	
	CN713	PEMC0969-109	B TO B CONNECTOR,(1-9)TERMINAL	
	CN801	PEMC0975-011	FLOATING B TO B,(1-11) SW REG	
	CN802	PEMC0915-009	FFC CONNECTOR,(1-9) FRONT	

– TUNER SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
△	RF1	PERF0161	RF CONVERTER	
△	TNR1	PERF0135	UHF/VHF TUNER	
△	TNR2	PERF0124-03	IF UNIT	
	Q1	DTC114EU	TRANSISTOR	
	Q2	2SB810H,J	TRANSISTOR	
	Q3	2SD1450S,T	TRANSISTOR	
	Q11	2SD1450S,T	TRANSISTOR	
	Q12	2SK381(C)	FE TRANSISTOR	
	Q13	DTC144EU	TRANSISTOR	
	Q14	2SC4081(RS)	TRANSISTOR	
	Q15	2SA1576(RS)	TRANSISTOR	
	Q16	2SC4081(RS)	TRANSISTOR	
	D1	MTZ33CT-77	ZENER DIODE	
	D2	1SS133	DIODE	
	D3	1SS133	DIODE	
	D4	1SS133	DIODE	
	R1	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R2	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R3	QRSA08J-331YN	RESISTOR	330Ω,1/10W
	R28	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R29	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R30	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R31	QRSA08J-683YN	RESISTOR	68kΩ,1/10W
	R32	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R33	QRSA08J-821YN	RESISTOR	820Ω,1/10W
	R34	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R35	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R36	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R37	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R38	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R39	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R42	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	C1	QETC1CM-336	E CAPACITOR	33μF,16V
	C6	QETC1CM-106	E CAPACITOR	10μF,16V
	C7	QETC1HM-106	E CAPACITOR	10μF,50V
	C8	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C9	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C10	QCYA1HK-471	CAPACITOR	470pF,50V
	C13	QCYA1HK-222	CAPACITOR	0.0022μF,50V
	C14	QCFB1EZ-223	CAPACITOR	0.022μF,25V
	C15	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C19	QCXB1CM-222	CAPACITOR	0.0022μF,16V
	L1	PU59152-6R8J	COIL	6.8μH
	T1	PELN0806	COIL	
	WR1	PW30402-BB08M	COAXIAL CABLE	

– VPS SECTION (HR-J215EG ONLY) –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC101	SAA4700	IC	
	R101	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R102	QRSA08J-753YN	RESISTOR	75kΩ,1/10W
	R103	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	C101	QCFA1HZ-223	CAPACITOR	0.022μF,50V
	C102	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C103	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C104	QCYA1HJ-102	CAPACITOR	0.001μF,50V
	C105	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C106	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C107	QCYA1HJ-471	CAPACITOR	470pF,50V

– VIDEO SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	D201	1SS133	DIODE	
	D202	1SS133	DIODE	
	D250	1SS133	DIODE	
	R209	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R210	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R211	QRSA08J-363YN	RESISTOR	36kΩ,1/10W
	R212	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R214	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R220	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R221	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	C205	QEP61EM-475	NP E CAPACITOR	4.7μF,25V
	C208	QCFA1HZ-103	CAPACITOR	0.01μF,50V

– AUDIO SECTION –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC301	BA7795LS	IC	
		or XRA7795LS	IC	
	IC302	BA15218	IC,HR-J215EG	
		or XRA15218	IC,HR-J215EG	
	Q303	2SC1740S(QR)	TRANSISTOR	
		or 2SC3199(YG)-TJK	TRANSISTOR	
	Q304	2SA933S(QR)	TRANSISTOR	
	Q305	2SA933S(QR)	TRANSISTOR	
	D303	1SS133	DIODE,HR-J210E J215E	
	R319	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R320	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R322	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R323	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R324	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R325	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R326	QRSA08J-3R3YN	RESISTOR	3.3Ω,1/10W
	R327	QRD161J-820	RESISTOR	82Ω,1/6W
	R328	QRD161J-393	RESISTOR	39kΩ,1/6W
	R329	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R330	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R331	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R332	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R333	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R335	QRD161J-223	RESISTOR	22kΩ,1/6W
	R336	QRD161J-820	RESISTOR	82Ω,1/6W
	R337	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
	R338	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R340	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R341	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R342	QRSA08J-475YN	RESISTOR	4.7MΩ,1/10W
	R343	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R344	QRD161J-393	RESISTOR	39kΩ,1/6W
	R345	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R346	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R347	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R348	QRD161J-183	RESISTOR	18kΩ,1/6W
	R349	QRD161J-103	RESISTOR,HR-J210E J215E	10kΩ,1/6W
	R350	QRD161J-123	RESISTOR	12kΩ,1/6W
	R351	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R352	QRD161J-273	RESISTOR	27kΩ,1/6W
	R353	QRSA08J-221YN	RESISTOR	220Ω,1/10W
	R354	QRD161J-102	RESISTOR	1kΩ,1/6W
	R355	QRD161J-102	RESISTOR	1kΩ,1/6W
	R394	QRSA08J-332YN	RESISTOR,HR-J215EG	3.3kΩ,1/10W
	R395	QRSA08J-102YN	RESISTOR,HR-J215EG	1kΩ,1/10W
	C313	QCYA1HK-331	CAPACITOR	330pF,50V
	C314	QFN31HJ-823	F CAPACITOR	0.082μF,50V
	C315	QETC1HM-106	E CAPACITOR	10μF,50V
	C316	QCYA1HK-472	CAPACITOR	0.0047μF,50V
	C317	QCYA1HK-223	CAPACITOR	0.022μF,50V
	C319	QETC1CM-476	E CAPACITOR	47μF,16V
	C320	QCC11EJ-153	CAPACITOR	0.015μF,25V
	C321	QETC1HM-105	E CAPACITOR	1μF,50V
	C323	QCBB1HJ-681	CAPACITOR	680pF,50V
	C324	QEK61EM-475	E CAPACITOR	4.7μF,25V

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	C325	QETC1CM-336	E CAPACITOR	33μF,16V
	C326	QCYA1HK-123	CAPACITOR	0.012μF,50V
	C327	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C328	QETC1EM-226	E CAPACITOR	22μF,25V
	C329	QCYA1EK-223	CAPACITOR	0.022μF,25V
	C330	QCYA1EK-223	CAPACITOR,HR-J210E J215E	0.022μF,25V
	C331	QETC1HM-106	E CAPACITOR	10μF,50V
	C347	QETC1HM-106	E CAPACITOR	10μF,50V
	C350	QETC1EM-476	E CAPACITOR,HR-J215EG	47μF,25V
	L303	PU58308-123J	COIL	12mH
△	T301	PELN0832	OSC TRANSFORMER	

- SERVO SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC401	JCP0039	IC	
		or HD49780NT	IC	
	D401	1SS133	DIODE	
	D402	1SS133	DIODE	
	D403	1SS133	DIODE	
	R401	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R402	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R403	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R404	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R405	QRSA08J-474YN	RESISTOR	470kΩ,1/10W
	R406	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R407	QRD161J-102	RESISTOR	1kΩ,1/6W
	R408	QRD161J-102	RESISTOR	1kΩ,1/6W
	R409	QRD161J-102	RESISTOR	1kΩ,1/6W
	R410	QRSA08J-684YN	RESISTOR	680kΩ,1/10W
	R411	QRSA08J-225YN	RESISTOR	2.2MΩ,1/10W
	R412	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R413	QRD161J-222	RESISTOR	2.2kΩ,1/6W
	R414	QRD161J-122	RESISTOR	1.2kΩ,1/6W
	R415	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R416	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R417	QRSA08J-223YN	RESISTOR	22kΩ,1/10W
	R418	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R419	QRD161J-273	RESISTOR	27kΩ,1/6W
	R421	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
	R423	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R424	QRSA08J-273YN	RESISTOR	27kΩ,1/10W
	R429	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R430	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
	R431	QRSA08J-274YN	RESISTOR	270kΩ,1/10W
	R432	QRSA08J-822YN	RESISTOR	8.2kΩ,1/10W
	R436	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R438	QRD161J-104	RESISTOR	100kΩ,1/6W
	R439	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R440	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R445	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	C401	QCYA1HK-102	CAPACITOR	0.001μF,50V
	C402	QETC1EM-226	E CAPACITOR	22μF,25V
	C403	QETC1EM-226	E CAPACITOR	22μF,25V
	C404	QCSA1HJ-181	CAPACITOR	180pF,50V
	[illegible]	[illegible]	CAPACITOR	0.001μF,50V
	C407	QCYA1HK-102	CAPACITOR	[illegible]
	C408	QFV11HJ-563	F CAPACITOR	0.056μF,50V
	C409	QCBB1HJ-102	CAPACITOR	0.001μF,50V
	C410	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C411	QCYA1EK-103	CAPACITOR	0.01μF,25V
	C412	QETC1HM-106	E CAPACITOR	10μF,50V
	C413	QFV11HJ-224	F CAPACITOR	0.22μF,50V
	C414	QCYA1EK-223	CAPACITOR	0.022μF,25
	C415	QETC1HM-475	E CAPACITOR	4.7μF,50
	C416	QETC1HM-475	E CAPACITOR	4.7μF,50
	C417	QETC1HM-106	E CAPACITOR	10μF,50
	C418	QETC1HM-106	E CAPACITOR	10μF,50
	C419	QCC31CK-223	CAPACITOR	0.022μF,16
	C420	QFV11HJ-334	F CAPACITOR	0.33μF,50
	C421	QCSA1HJ-471	CAPACITOR	470pF,50
	C422	QCYA1HK-102	CAPACITOR	0.001μF,50
△	CP401	ICP-N15	CIRCUIT PROTECTOR	

- SYSTEM CONTROL SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	IC601	HD6433927A83F	IC	
	IC602	AT93C56-10PC	IC	
		or 93C56/P	IC	
		or S-2922AI10	IC	
		or 93LC56B/P	IC	
		or 93LC56/P	IC	
	IC603	MM1255XF	IC	
	Q601	DTC124EU	TRANSISTOR	
	Q602	DTC124EU	TRANSISTOR	
	Q603	DTC124EU	TRANSISTOR	
	Q604	DTC124EU	TRANSISTOR	
	Q605	DTC114EU	TRANSISTOR	
	Q608	DTC124EU	TRANSISTOR	
	Q610	DTC114TU	TRANSISTOR	
	Q611	2SB1256	TRANSISTOR	
	Q613	DTC114WU	TRANSISTOR,HR-J215EG	
	D601	11ES2	DIODE	
	D602	11ES2	DIODE	
	D605	1SS133	DIODE	
	D606	1SS133	DIODE	
	D607	1SS133	DIODE	
	D610	1SS133	DIODE	
	D611	1SS133	DIODE	
	D612	1SS133	DIODE	
	D672	11ES2	DIODE	
	D673	11ES2	DIODE	
	R601	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R602	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R603	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R604	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R606	QRD161J-102	RESISTOR	1kΩ,1/6W
	R607	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R608	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R609	QRSA08J-0R0Y	RESISTOR,HR-J215EG	0Ω,1/10W
		QRSA08J-271YN	RESISTOR,HR-J210E J215E	270Ω,1/10W
	R610	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R611	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R612	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R613	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R614	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R615	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R616	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R617	QRSA08J-332YN	RESISTOR	3.3kΩ,1/10W
	R619	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R620	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R621	QRSA08J-271YN	RESISTOR	270Ω,1/10W
	R622	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R623	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R624	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R625	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R626	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R627	QRD161J-102	RESISTOR	1kΩ,1/6W
	R628	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R629	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R630	QRD161J-102	RESISTOR	1kΩ,1/6W
	R631	QRD161J-272	RESISTOR	2.7kΩ,1/6W
	R632	QRD161J-102	RESISTOR	1kΩ,1/6W
	R633	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R634	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R635	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R636	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R637	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R638	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R639	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R640	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	R641	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R642	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R643	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R644	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R645	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R646	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R647	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R648	QRD161J-102	RESISTOR	1kΩ,1/6W
	R649	QRD161J-103	RESISTOR	10kΩ,1/6W
	R650	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R651	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R652	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R653	QRSA08J-0R0Y	RESISTOR,HR-J215EG	0Ω,1/10W
	R654	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R655	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R656	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R657	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R658	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R659	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R660	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R661	QRD161J-103	RESISTOR	10kΩ,1/6W
	R662	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R663	QRD161J-103	RESISTOR	10kΩ,1/6W
	R664	QRD161J-103	RESISTOR	10kΩ,1/6W
	R665	QRSA08J-105YN	RESISTOR	1MΩ,1/10W
	R666	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R667	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R669	QRSA08J-104YN	RESISTOR	100kΩ,1/10W
	R670	QRSA08J-123YN	RESISTOR	12kΩ,1/10W
	R671	QRSA08J-333YN	RESISTOR	33kΩ,1/10W
	R672	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R673	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R674	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R675	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R676	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R677	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	C606	QCSA1HJ-121	CAPACITOR	120pF,50V
	C607	QCSA1HJ-121	CAPACITOR	120pF,50V
	C610	QETN0JM-228S	E CAPACITOR	2200μF,6.3V
	C611	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C612	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C613	QCSA1HJ-270	CAPACITOR	27pF,50V
	C614	QAT3120-450	TRIM CAPACITOR,TIMER CLOCK	
	C615	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C616	QETC1CM-106	E CAPACITOR	10μF,16V
	C617	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C619	QCC11EK-104	CAPACITOR	0.1μF,25V
	C621	QETC1CM-106	E CAPACITOR	10μF,16V
	C622	QETC1CM-106	E CAPACITOR	10μF,16V
	L601	PELN0530-101JZ	COIL	100μH
△	CF601	PEVB0497	RESONATOR	
△	X601	PEVB0422	CRYSTAL RESONATOR	
△	TH601	PESC1041	POSI THERMISTOR	
△	CP601	ICP-N25	CIRCUIT PROTECTOR	
△	CP602	ICP-N20	CIRCUIT PROTECTOR	

- SWITCHING REGULATOR SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q801	2SC3616(MLK)	TRANSISTOR	
	Q802	2SD2166	TRANSISTOR	
	Q803	2SC1740S	TRANSISTOR	
		or 2SC2785(J-E)-T	TRANSISTOR	
	Q804	DTA114EU	TRANSISTOR	
	Q805	2SD2144S(UVW)	TRANSISTOR	
	D802	RD5.1JSB2	DIODE	
	D803	1SS133	DIODE	
	D804	HZ15CP	ZENER DIODE	
	R801	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R802	QRD161J-473	RESISTOR	47kΩ,1/6W
	R803	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R804	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	R805	QVPA606-471Z	V RESISTOR,SWD 5V	
	R806	QRD161J-471	RESISTOR	470Ω,1/6W
	R808	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R811	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R812	QRSA08J-561YN	RESISTOR,HR-J215EG	560Ω,1/10W
		QRSA08J-511YN	RESISTOR,HR-J210E J215E	510Ω,1/10W
	R813	QRD161J-471	RESISTOR	470Ω,1/6W
	R815	QRG02DJ-102X	OMF RESISTOR	1kΩ,2W
	C801	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C802	QETC1CM-106	E CAPACITOR	10μF,16V
	C803	QETC1CM-107	E CAPACITOR	100μF,16V
	C804	QETC0JM-226	E CAPACITOR	22μF,6.3V
	C805	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C806	QFLA1HJ-102Z	F CAPACITOR	0.001μF,50V
	L801	PU48530-101K	COIL	100μH
△	CP801	ICP-N20	CIRCUIT PROTECTOR	

- TERMINAL BOARD SECTION -

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	Q701	2SB810H,J	TRANSISTOR	
	Q702	2SC3616(MLK)	TRANSISTOR	
	D701	1SS133	DIODE	
	D703	1SS133	DIODE,HR-J210E J215E	
	D704	1SS133	DIODE,HR-J215EG	
	R701	QRSA08J-393YN	RESISTOR	39kΩ,1/10W
	R702	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R706	QRG01DJ-331X	OMF RESISTOR	330Ω,1W
	R707	QRSA08J-471YN	RESISTOR	470Ω,1/10W
	C701	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C704	QETC1CM-107	E CAPACITOR	100μF,16V
	C705	QETC1CM-106	E CAPACITOR	10μF,16V
	L701	PU48530-100K	COIL	10μH
	L702	PU59152-100J	COIL	10μH

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VIDEO UNIT BOARD ASSEMBLY <05>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA	PB10745A-05	VIDEO UNIT BOARD ASSY	
	IC1	TL8839P	IC	
	IC2	JCP0035-2	IC	
	Q1	2SA1576(QRS)	TRANSISTOR	
	Q2	2SC4081(QRS)	TRANSISTOR	
	Q3	2SA1576(QRS)	TRANSISTOR	
	Q4	2SC4081(QRS)	TRANSISTOR	
	Q5	2SC4081(QRS)	TRANSISTOR	
	Q6	2SC4081(QRS)	TRANSISTOR	
	Q7	2SC4081(QRS)	TRANSISTOR	
	Q8	DTC114WU	TRANSISTOR	
	Q9	2SC4081(QRS)	TRANSISTOR	
	Q10	2SA1576(QRS)	TRANSISTOR	
	Q11	DTC144WU	TRANSISTOR	
	Q12	DTC144WU	TRANSISTOR	
	Q13	DTA124EU	TRANSISTOR	
	Q14	2SA1576(QRS)	TRANSISTOR	
	Q15	2SC4081(QRS)	TRANSISTOR	
	D1	1SS133	DIODE	
	D2	1SS133	DIODE	
	D3	1SS133	DIODE	
	D4	1SS133	DIODE	
	D5	1SS133	DIODE	
	D7	1SS292	DIODE	
	R1	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R2	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
	R3	NRSA63J-361N	RESISTOR	360Ω,1/16W
	R4	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R5	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R6	NRSA63J-475N	RESISTOR	4.7MΩ,1/16W
	R7	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R8	QRS188J-102	RESISTOR	1kΩ,1/8W
	R9	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R10	NRSA63J-621N	RESISTOR	620Ω,1/16W
	R11	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R12	NRSA63J-182N	RESISTOR	1.8kΩ,1/16W
	R13	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R14	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R15	NRSA63J-221N	RESISTOR	220Ω,1/16W
	R16	NRSA63J-332N	RESISTOR	3.3kΩ,1/16W
	R17	NRSA63J-392N	RESISTOR	3.9kΩ,1/16W
	R18	NVP1301-152N	V RESISTOR,NC BALANCE	
	R19	NRSA63J-222N	RESISTOR	2.2kΩ,1/16W
	R20	NRSA63J-681N	RESISTOR	680Ω,1/16W
	R21	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R22	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R23	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R24	NRSA63J-821N	RESISTOR	820Ω,1/16W
	R25	NVP1301-472N	V RESISTOR,PB Y LEVEL	
	R26	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R27	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R28	NVP1301-223N	V RESISTOR,CARRIER	
	R29	NVP1301-103N	V RESISTOR,DEVIATION	
	R30	NRSA63J-432N	RESISTOR	4.3kΩ,1/16W
	R31	NRSA63J-122N	RESISTOR	1.2kΩ,1/16W
	R32	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R33	NRSA63J-561N	RESISTOR	560Ω,1/16W
	R34	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R35	NRSA63J-272N	RESISTOR	2.7kΩ,1/16W
	R36	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R37	NRSA63G-511N	RESISTOR	510Ω,1/16W
	R38	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R39	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R40	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R41	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R42	NVP1301-153N	V RESISTOR,EE Y LEVEL	
	R43	NRSA63J-823N	RESISTOR	82kΩ,1/16W
	R44	NRSA63J-334N	RESISTOR	330kΩ,1/16W
	R45	NVP1301-103N	V RESISTOR,W/D CLIP	
	R46	NRSA63J-103N	RESISTOR	10kΩ,1/16W
	R47	NRSA63J-434N	RESISTOR	430kΩ,1/16W
	R48	NRSA63J-562N	RESISTOR	5.6kΩ,1/16W
	R49	NRSA63J-105N	RESISTOR	1MΩ,1/16W
	R50	NRSA63J-331N	RESISTOR	330Ω,1/16W
	R51	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R52	NVP1301-222N	V RESISTOR,REC COLOR LEVEL	
	R53	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R54	NRSA63J-271N	RESISTOR	270Ω,1/16W
	R55	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R56	NRSA63J-333N	RESISTOR	33kΩ,1/16W
	R57	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R58	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R59	NRSA63J-102N	RESISTOR	1kΩ,1/16W
	R60	NRSA63J-132N	RESISTOR	1.3kΩ,1/16W
	C1	NCS31HJ-221A	CAPACITOR	220pF,50V
	C2	NCS31HG-681A	CAPACITOR	680pF,50V
	C3	NCS31HG-331A	CAPACITOR	330pF,50V
	C4	NCS31HJ-220A	CAPACITOR	22pF,50V
	C5	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C6	NCS31HJ-150A	CAPACITOR	15pF,50V
	C7	NCS31HJ-220A	CAPACITOR	22pF,50V
	C8	NCS31HJ-680A	CAPACITOR	68pF,50V
	C9	NCS31HG-121A	CAPACITOR	120pF,50V
	C10	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C11	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C12	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C13	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C14	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C15	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C16	NCS31HJ-390A	CAPACITOR	39pF,50V
	C17	NCS31HJ-180A	CAPACITOR	18pF,50V
	C18	NCS31HJ-220A	CAPACITOR	22pF,50V
	C19	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C20	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C21	NCS31HJ-330A	CAPACITOR	33pF,50V
	C22	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C24	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C25	QETC1CM-106	E CAPACITOR	10μF,16V
	C26	QETC1AM-226	E CAPACITOR	22μF,10V
	C27	QETC1CM-106	E CAPACITOR	10μF,16V
	C28	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C29	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C30	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C31	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C32	QETC1HM-225	E CAPACITOR	2.2μF,50V
	C33	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C34	NCS31HJ-620A	CAPACITOR	62pF,50V
	C35	NCS31HG-201A	CAPACITOR	200pF,50V
	C36	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C37	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C38	NCS31HG-130A	CAPACITOR	13pF,50V
	C39	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C40	QETC1HM-105	E CAPACITOR	1μF,50V
	C41	NCB31EK-223A	CAPACITOR	0.022μF,25V
	C42	NCS31HJ-101A	CAPACITOR	100pF,50V
	C43	NCS31HJ-390A	CAPACITOR	39pF,50V
	C44	QENC1EM-475	NP E CAPACITOR	4.7μF,25V
	C45	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C46	NCF31CZ-473A	CAPACITOR	0.047μF,16V
	C47	QETC1HM-104	E CAPACITOR	0.1μF,50V
	C48	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C49	NCB31CK-333A	CAPACITOR	0.033μF,16V
	C50	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C51	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C52	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C53	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C54	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C55	QETC1EM-475	E CAPACITOR	4.7μF,25V
	C56	NCS31HJ-5R0A	CAPACITOR	5pF,50V
	C57	QETC1HM-105	E CAPACITOR	1μF,50V
	C58	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C59	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C60	QETC0JM-107	E CAPACITOR	100μF,6.3V
	C61	NCB31HK-103A	CAPACITOR	0.01μF,50V
	C62	NCB31HK-182A	CAPACITOR	0.0018μF,50V
	C63	NCS31HJ-300A	CAPACITOR	30pF,50V
	C64	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	C65	NCB31CK-473A	CAPACITOR	0.047μF,16V
	C69	NCB31EK-103A	CAPACITOR	0.01μF,25V
	C70	NCF31HZ-103A	CAPACITOR	0.01μF,50V
	C71	NCF31CZ-104A	CAPACITOR	0.1μF,16V
	L1	PU59152-121J	COIL	120μH
	L2	PU59152-330J	COIL	33μH
	L3	PU59152-330J	COIL	33μH
	L4	PU59152-820J	COIL	82μH
	L5	PU59152-221J	COIL	220μH
	L6	PU59153-101K	COIL	100μH
	L7	PU59152-680J	COIL	68μH
	L8	PU48530-101K	COIL	100μH
	L9	PU59152-121J	COIL	120μH
	L10	PU59152-150J	COIL	15μH
	L11	PU48530-561J	COIL	560μH
	L12	PU59152-680J	COIL	68μH
	LPF1	PELN0477	LOW PASS FILTER	
	LPF2	PELN0856	LOW PASS FILTER	
	DL1	PEVB0515	COMB FILTER	
△	X1	PEVB0386	CRYSTAL RESONATOR	
	CN1	PEMC0712-111	PIN HEADER,(2-12) MAIN	
	CN2	PEMC0712-112	PIN HEADER,(1-12) MAIN	
	CN3	PEMC0712-111	PIN HEADER,(1-11) MAIN	

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TERMINAL BOARD ASSEMBLY <06>

– TERMINAL BOARD ASSY(HR-J210E HR-J215E) –

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10841B-01	TERMINAL BOARD ASSEMBLY	
	IC2	BA15218N	IC	
		or XRA15218N	IC	
	Q101	2SA933S(RS)	TRANSISTOR	
		or 2SA1267(YG)JK	TRANSISTOR	
	Q102	2SA933S(RS)	TRANSISTOR	
		or 2SA1267(YG)JK	TRANSISTOR	
	Q103	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)-TJK	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	R9	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R10	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R14	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R15	QRSA08J-473YN	RESISTOR	47kΩ,1/10W
	R18	QRSA08J-682YN	RESISTOR	6.8kΩ,1/10W
	R20	QRSA08J-183YN	RESISTOR	18kΩ,1/10W
	R101	QRD121J-391S	RESISTOR	390Ω,1/2W
	R102	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R103	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R104	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R106	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R107	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R108	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R109	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	C5	QETC1EM-476	E CAPACITOR	47μF,25V
	C6	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C101	QETC0JM-108	E CAPACITOR	1000μF,6.3V
	C102	QETC1CM-476	E CAPACITOR	47μF,16V
	C103	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C111	QETC1AM-476	E CAPACITOR	47μF,10V
	L101	PU48530-101K	COIL	100μH
	EQ101	PELN0742	EQUALIZER	
	ETH1	PQ46090	EARTH PLATE,TERM BOARD ASSY	
	SCW1	SDSF3008Z	SCREW,X2 TERMINAL BOARD	
	TB1	PQ21697B	TERMINAL BOARD ASSY	
	JA701	PEMC1019	RGB21PIN SOCKET,PERI-1	
	CN712	PEMC0970-215	B TO B CONNECTOR,(1-15) MAIN	
	CN713	PEMC0970-209	B TO B CONNECTOR,(1-9) MAIN	

– TERMINAL BOARD ASSY(HR-J215EG) –

	PWBA1	PB10852B	TERMINAL BOARD ASSEMBLY	
	IC1	BA7631	IC	
	IC102	BA7630S	IC	
	Q101	2SA1267(YG)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	Q102	2SA1267(YG)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	Q103	2SA1267(YG)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	Q104	2SA1267(YG)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	Q105	2SC1740S(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
		or 2SC3199(GB)JK	TRANSISTOR	
	Q106	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(GB)JK	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	Q107	2SA1267(YG)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
	R3	QRSA08J-221YN	RESISTOR	220Ω,1/10W

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	R7	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R8	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R9	QRSA08J-221YN	RESISTOR	220Ω,1/10W
	R13	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R14	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R15	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R16	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R17	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R18	QRSA08J-472YN	RESISTOR	4.7kΩ,1/10W
	R101	QRD121J-391S	RESISTOR	390Ω,1/2W
	R102	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R103	QRD121J-391S	RESISTOR	390Ω,1/2W
	R104	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R105	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R106	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R107	QRSA08J-153YN	RESISTOR	15kΩ,1/10W
	R108	QRSA08J-103YN	RESISTOR	10kΩ,1/10W
	R109	QRD161J-102	RESISTOR	1kΩ,1/6W
	R110	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R111	QRSA08J-222YN	RESISTOR	2.2kΩ,1/10W
	R112	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R113	QRSA08J-152YN	RESISTOR	1.5kΩ,1/10W
	R114	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R115	QRSA08J-750YN	RESISTOR	75Ω,1/10W
	R116	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R117	QRSA08J-335YN	RESISTOR	3.3MΩ,1/10W
	R119	QRD161J-0R0	RESISTOR	0Ω,1/6W
	C1	QETC1AM-476	E CAPACITOR	47μF,10V
	C2	QETC1CM-476	E CAPACITOR	47μF,16V
	C3	QEK61CM-106	E CAPACITOR	10μF,16V
	C4	QEK61CM-106	E CAPACITOR	10μF,16V
	C5	QEK61CM-106	E CAPACITOR	10μF,16V
	C6	QEK61CM-106	E CAPACITOR	10μF,16V
	C7	QEK61AM-476	E CAPACITOR	47μF,10V
	C8	QEK61AM-476	E CAPACITOR	47μF,10V
	C101	QETC1HM-474	E CAPACITOR	0.47μF,50V
	C102	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C103	QETC0JM-476	E CAPACITOR	47μF,6.3V
	C104	QENC1HM-474	NP E CAPACITOR	0.47μF,50V
	C105	QEP61HM-105	NP E CAPACITOR	1μF,50V
	C106	QEK61HM-105	E CAPACITOR	1μF,50V
	C107	QETC1CM-476	E CAPACITOR	47μF,16V
	C108	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C109	QETC0JM-477	E CAPACITOR	470μF,6.3V
	C110	QETC0JM-108	E CAPACITOR	1000μF,6.3V
	C111	QETC1AM-476	E CAPACITOR	47μF,10V
	C112	QETC1CM-476	E CAPACITOR	47μF,16V
	C113	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	L13	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L15	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L16	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L17	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L18	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L20	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L21	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L22	QRSA08J-0R0Y	RESISTOR	0Ω,1/10W
	L101	PU48530-101K	COIL	100μH
	L102	PU48530-101K	COIL	100μH
	L103	PU48530-101K	COIL	100μH
	EQ101	PELN0877	EQUALIZER	
	SW1	PU57908	SLIDE SWITCH,AV2/DECODE	
	ETH1	PQ46090	EARTH PLATE,TERM BOARD	
	SCW1	SDSF3008Z	SCREW,X4 PERI CONNECTOR	
	SCW2	SDSF3008Z	SCREW,BOARD	
	TB1	PQ21697F	TERMINAL BOARD ASSY	
	JA701	PEMC1019	RGB21PIN SOCKET,AV1 IN/OUT	
	JA702	PEMC1019	RGB21PIN SOCKET,AV2/DECODE	
	CN712	PEMC0970-215	B TO B CONNECTOR,(1-15)MAIN	
	CN713	PEMC0970-209	B TO B CONNECTOR,(1-9)MAIN	

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AUDIO/CONTROL HEAD BOARD ASSY <12>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA6	PB10819A6-02	AUDIO CONTROL HEAD BOARD ASSY	
	CN1	PU60910-107	WIRE TRAP,(1-7) MAIN	

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FRONT BOARD ASSEMBLY <28>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10836E	FRONT BOARD ASSEMBLY HR-J215EG	
		PB10836C-02	FRONT BOARD ASSEMBLY,HR-J210E	
		PB10836B-02	FRONT BOARD ASSEMBLY,HR-J215E	
△	IC1	UPD16311GC(K)	IC	
△		or UPD16311GC(E)	IC	
	IC2	GP1U581X	IR DETECT UNIT	
		or HC-377J	IR DETECT UNIT	
	D1	1SS132Y	DIODE	
	D2	1SS132Y	DIODE	
	D3	1SS132Y	DIODE	
	D4	1SS132Y	DIODE	
	D6	1SS132Y	DIODE	
	D8	1SS132Y	DIODE,HR-J215EG	
	D9	1SS132Y	DIODE,2 HEAD	
	D10	1SS132Y	DIODE,VCR PLUS,HR-J215E J215EG	
	D11	RD4.7ES-T1B2	ZENER DIODE	
	D12	SLC-22VR3F	LE DIODE,POWER	
	D13	SLH-34DC3F	LE DIODE,ONE P INDE	
	D32	11ES2	DIODE	
	R1	QRD161J-333	RESISTOR	33kΩ,1/6W
	R2	QRD161J-333	RESISTOR	33kΩ,1/6W
	R3	QRD161J-333	RESISTOR	33kΩ,1/6W
	R4	QRD161J-333	RESISTOR	33kΩ,1/6W
	R5	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R6	QRD161J-472	RESISTOR	4.7kΩ,1/6W
	R7	QRD161J-102	RESISTOR	1kΩ,1/6W
	R8	QRD161J-333	RESISTOR	33kΩ,1/6W
	R9	QRD161J-103	RESISTOR	10kΩ,1/6W
	R10	QRD161J-103	RESISTOR	10kΩ,1/6W
	R11	QRD161J-331	RESISTOR	330Ω,1/6W
	R12	QRD161J-331	RESISTOR	330Ω,1/6W
	R13	QRD161J-333	RESISTOR	33kΩ,1/6W
	RA1	QRB045J-333XF	RESISTOR ARRAY	33kΩ,4W
	C1	QETF0JM-336	E CAPACITOR	33μF,6.3V
	C2	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C3	QETF1HM-106	E CAPACITOR	10μF,50V
	C4	QCSB1HJ-330	CAPACITOR	33pF,50V
	C5	QCSB1HJ-330	CAPACITOR	33pF,50V
	C6	QETF0JM-227	E CAPACITOR	220μF,6.3V
	L1	PU48530-101J	COIL	100μH
	S1	PESW0525-02Z	TACT SWITCH,CH+	
	S2	PESW0525-02Z	TACT SWITCH,CH–	
	S3	PESW0525-02Z	TACT SWITCH,OPERATE	
	S4	PESW0525-02Z	TACT SWITCH,TIMER	
	S5	PESW0525-02Z	TACT SWITCH,FF	
	S6	PESW0525-02Z	TACT SWITCH,REEW	
	S7	PESW0525-02Z	TACT SWITCH,PLAY	
	S8	PESW0525-02Z	TACT SWITCH,STOP/EJECT	
	S10	PESW0525-02Z	TACT SWITCH,ONE P INDE	
	S11	PESW0525-02Z	TACT SWITCH,REC/ITR	
	S12	PESW0525-02Z	TACT SWITCH,PAUSE	
	S15	PESW0525-02Z	TACT SWITCH,CH SEARCH	
	S16	PESW0525-02Z	TACT SWITCH,STORE	
	S17	PESW0525-02Z	TACT SWITCH,PAL/SECAM	
	FDP1	PEDP0098-04	FLUORESCENT DISPLAY PANEL	
	HD1	PQM30038-6	LED HOLDER,D12	
	HD2	PQM30038-1-2	LED HOLDER,D13	
	HD3	PQ34951	FDP HOLDER(L)	
	HD4	PQ34952	FDP HOLDER(R)	
	CN1	PEMC0915-109	FFC CONNECTOR,(1-9)MAIN	

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PRE/REC AMP BOARD ASSEMBLY <43>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10835B2	PRE/REC BOARD ASSEMBLY	
	IC501	BA7182AS	IC	
	Q503	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	Q504	2SC1740S(RS)	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
	Q506	2SA1309(RS)	TRANSISTOR	
		or 2SA1267(G)JK	TRANSISTOR	
		or 2SA933S(RS)	TRANSISTOR	
		or 2SA1267(G)-TJK	TRANSISTOR	
	Q507	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
	Q510	2SC1740S(RS)	TRANSISTOR	
		or 2SC3199(G)	TRANSISTOR	
		or 2SC3311A(RS)	TRANSISTOR	
		or 2SC536SPA(FG)	TRANSISTOR	
	R506	QRSA08J-202YN	RESISTOR	2kΩ,1/10W
	R507	QRSA08J-182YN	RESISTOR	1.8kΩ,1/10W
	R508	QRSA08J-681YN	RESISTOR	680Ω,1/10W
	R515	QRD161J-681	RESISTOR	680Ω,1/6W
	R516	QRD161J-102	RESISTOR	1kΩ,1/6W
	R518	QRD161J-562	RESISTOR	5.6kΩ,1/6W
	R519	QRSA08J-562YN	RESISTOR	5.6kΩ,1/10W
	R520	QRSA08J-391YN	RESISTOR	390Ω,1/10W
	R521	QRSA08J-911YN	RESISTOR	910Ω,1/10W
	R522	QRSA08J-391YN	RESISTOR	390Ω,1/10W
	R524	QRSA08J-272YN	RESISTOR	2.7kΩ,1/10W
	R525	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R526	QRSA08J-102YN	RESISTOR	1kΩ,1/10W
	R527	QRSA08J-122YN	RESISTOR	1.2kΩ,1/10W
	R528	QRSA08J-391YN	RESISTOR	390Ω,1/10W
	R535	QRSA08J-561YN	RESISTOR	560Ω,1/10W
	R550	QRD161J-103	RESISTOR	10kΩ,1/6W
	R551	QRD161J-103	RESISTOR	10kΩ,1/6W
	R554	QRD161J-363	RESISTOR	36kΩ,1/6W
	C504	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C507	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C508	QEK60JM-476	E CAPACITOR	47μF,6.3V
	C509	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C512	QCSA1HJ-270	CAPACITOR	27pF,50V
	C513	QCSA1HJ-270	CAPACITOR	27pF,50V
	C514	QCSA1HJ-2R0	CAPACITOR	2pF,50V
	C515	QCSA1HJ-220	CAPACITOR	22pF,50V
	C516	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C517	QCSA1HJ-180	CAPACITOR	18pF,50V
	C521	QCSA1HJ-102	CAPACITOR	0.001μF,50V
	C550	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C551	QCVB1CN-103	CAPACITOR	0.01μF,16V
	C552	QCSA1HJ-680	CAPACITOR	68pF,50V
	C554	QCFA1HZ-103	CAPACITOR	0.01μF,50V
	C555	QEK60JM-476	E CAPACITOR	47μF,6.3V
	C556	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C557	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C558	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C559	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C560	QCYA1EK-104	CAPACITOR	0.1μF,25V
	C561	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C562	QFV11HJ-104	F CAPACITOR	0.1μF,50V
	C566	QCSB1HJ-390	CAPACITOR	39pF,50V
	L501	PU48530-101K	COIL	100μH
	L502	PU48530-101K	COIL	100μH
	L505	PU59152-560J	COIL	56μH
	L506	PU59152-560J	COIL	56μH
	L508	PU59152-560J	COIL	56μH
	BKT1	PQ21512	SHIELD FRAME,PRE BOARD ASSY	
	CN501	PEMC1056-112	CONNECTOR,(5-16) MAIN	
	CN502	PU59973-4	CONNECTOR,(1-4) UPPER DRUM	

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DECK TERMINAL BOARD ASSEMBLY <51>

#△	REF No.	PART No.	PART NAME, DESCRIPTION	
	PWBA1	PB10819A1-02	DECK TERMINAL BOARD ASSEMBLY	
△	IC1	BA6418N	IC	
△		or XRA6418N	IC	
	Q2	PT491F	END SENSOR	
	D1	SIR-381SB3FM	LE DIODE	
	D2	RD6.2ES-T1B2	ZENER DIODE	
	R1	QRD161J-102	RESISTOR	1kΩ,1/6W
	R3	QRD161J-331	RESISTOR	330Ω,1/6W
	R4	QRD161J-820	RESISTOR	82Ω,1/6W
	R6	QRD161J-331	RESISTOR	330Ω,1/6W
	R7	QRD161J-332	RESISTOR	3.3kΩ,1/6W
	C1	QCVB1CM-103	CAPACITOR	0.01μF,16V

#△ REF No.	PART No.	PART NAME, DESCRIPTION	
C3	QETA1CM-227	E CAPACITOR	220μF,16V
PS1	PS5705HR	PH INTERRUPTER	
PS2	PS5705HR	PH INTERRUPTER	
WR1	PEWR0728-01-01	PARALLEL WIRE	
CN1	PEMC0915-018	FFC CONNECTOR,(1-18) MAIN	
CN2	PU60642	7PIN CONNECTOR,(1-7) CAP MDA	
CN3	PU60640	4PIN CONNECTOR,(1-4) CASS HOU	
CN5	PU60910-2	CONNECTOR,(1-2) LOADING MOTOR	

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CASSETTE HOUSING BOARD <56>

PWBA3	PB10819A3-02	CASSETTE HOUSING BOARD ASSY	
Q2	PN268VI	PHOTO TRANSISTOR	
C1	QCVB1CM-103	CAPACITOR	0.01μF,16V
S1	PESW0589	PUSH SWITCH	
CN2	PU60639	4PIN SOCKET,(1-4)DECK TERMINAL	

SECTION 6
TECHNICAL INFORMATION

6.1 SYSCON CIRCUIT

6.1.1 Syscon CPU pin function (IC601) 1/2

PIN NO.	LABEL	IN/OUT	NOTE
1	P.DOWN	IN	POWER DOWN DETECT(POWER DOWN:H → L)
2	SYNC DET	IN	SYNC DETECT (NO SYNC:H)
3	LOCK DET	IN	TUNING LOCK CHECK
4	AVGFM	IN	AUTO TRACKING DATA(AVERAGE VOLTAGE OF PB FM LEVEL) INPUT
5	AVSS	-	GND
6	TEST	-	GND
7	X2	-	MAIN SYSTEM CLOCK(10MHz)
8	X1	-	MAIN SYSTEM CLOCK(10MHz)
9	VSS	-	GND
10	OSC1	IN	SUB SYSTEM CLOCK
11	OSC2	OUT	SUB SYSTEM CLOCK
12	RESET	IN	RESET AT CONNECT VCR TO AC
13	(NMI)	-	NC
14	TU CTL	OUT	TUNER MODE:H
15	PLL DATA	OUT	TUNING CONTROL SERIAL DATA OUTPUT
16	V.MUTE	OUT	VIDEO MUTE CONTROL(MUTE ON:H)
17	PLL CLK	OUT	TUNING DATA TRANSFER CLOCK
18	M.CE	OUT	MOMORY IC CHIP ENABLE
19	F.DATA	IN/OUT	MEMORY IC DATA
20	P.MUTE	OUT	PICTURE MUTE CONTROL(MUTE ON:L)
21	RAE OUT	-	NC
22	TU FG	IN	TAKE-UP REEL ROTATION DET/TAPE REMAIN
23	SUP FG	IN	SUPPLY REEL ROTATION DET/TAPE REMAIN
24	DAV	IN	VPS TRANSMITION SIGNAL
25	CASS	IN	CASSETTE SENSOR (SENSOR ON:L)
26	LSA	IN	MECHANISM MODE DETECT
27	LSB	IN	MECHANISM MODE DETECT
28	REC SF	IN	REC SAFETY SW DETECT (SW ON:L)
29	END SENS	IN	TRAILER TAPE DETECT(DETECT ON:L)
30	CAP REV	OUT	CAPSTAN MOTOR CONTROL (FWD:H/REV:L)
31	H SEL	-	NC
32	A/M/S	-	NC
33	REC ST	OUT	REC START:H
34	REC	OUT	REC MODE:H
35	LCM1	OUT	LOADING MOTOR DRIVE(1)
36	LCM2	OUT	LOADING MOTOR DRIVE(2)
37	LP SPEC	OUT	LP SPECIAL PB MODE:H
38	P.CTL	OUT	POWER CONTROL(POWER ON:H)
39	V-UP	OUT	MOTOR DRIVE VOLTAGE SELECT (M17V:H)
40	PB(H)/PB(L)	IN	PB MODE:H(RF CONV ON/OFF CONTROL)

Table 6-1-1 SYSCON CPU pin function (1/2)

6.1.2 Syscon CPU pin function (IC601) 2/2

PIN NO.	LABEL	IN/OUT	NOTE
41	STL	IN	SHUTTLE SWITCH
42	VP SDA	OUT	VPS SERIAL DATA OUTPUT(FOR PROGRAMING CONTROL)
43	VP SCL	OUT	VPS DATA TRANSFER CLOCK
44	YNR CTL	OUT	PICTURE CONTROL(YNR CTL:L)
45	VPCTL	OUT	V.PULSE ADDITION TIMING CONTROL
46	SLE CTL	OUT	SP/LP/EP MODE CONTROL
47	PROTECT	IN	POWER PROTECT DETECT(POWER OFF:L)
48	EE	OUT	EE MODE:L
49	PB SPCL	OUT	SPECIAL PB MODE:L
50	RC IN	IN	REMOTE CONTROL DATA INPUT
51	CCIR	OUT	CCIR:L
52	CTL C/D	IN	CTL PULSE INPUT(MODE DETECT/BLANK PORTION DET)
53	SHQ ON	OUT	SUPPER QUALITY SWITCH
54	AV2/CH+	IN	AV2 SELECT SWITCH
55	SERVO	OUT	CAPSTAN MOTOR CONTROL(SERVO:L/MECHACON:H)
56	PAUSE	OUT	CAPSTAN MOTOR CONTROL(PAUSE:L)
57	S-OUT	OUT	ON SCREEN CONTROL DATA
58	S-IN	IN	ON SCREEN /FDP CONTROL DATA
59	S-CLK	OUT	DATA TRANSFER CLOCK
60	SERVO DATA	OUT	SERVO IC CONTROL DATA
61	STB	OUT	CLOCK OUTPUT PERMISSION
62	SERVO CLK	OUT	DATA TRANSFER CLOCK
63	VCC	-	SYSTEM POWER
64	A.MUTE	OUT	AUDIO MUTE CONTROL(MUTE ON:H)
65	DUTY I/O	IN/OUT	IN/OUT INDEX DATA CONTROL
66	FRONT	OUT	FRONT INPUT:H
67	CTL CLOCK	IN	INDEX CONTROL
68	PERI 2	OUT	PERI-2 CONNECTOR SELECT
69	CAP FG	IN	TAPE SPEED DETECT/BACK SPACE COUNT
70	CH DATA	OUT	IIL LOGIC CTL DATA
71	D.FF	IN	DRUM ROTATION DETECT/REC TIMING CONTROL
72	AVCC	-	SYSTEM POWER(for ANALOG)
73	PAUSE IN	IN	PAUSE CONTROL(PAUSE ON:L)
74	SCR	IN	NC
75	DRUM V	OUT	DRUM MOTOR CONTROL
76	CAP V	OUT	CAPSTAN MOTOR CONTROL
77	D.V.DET	IN	DRUM DRIVE VOLTAGE DETECT
78	JSA	-	NC
79	JSB	-	NC
80	START SENS.	IN	LEADER TAPE DETECT(DETECT ON:L)

Table 6-1-2 SYSCON CPU pin function (2/2)